

# Study Notes & Key Points

pertinent to  
The Origin, Training and Licensing  
of  
Aircraft Design and Maintenance  
Engineers in United Kingdom -  
Canadian Civilian Aviation  
post WW1

If you want to know your past — look into your present conditions  
If you want to know your future condition — consider into your present situation  
If you want to know your present situation — look into your past  
- Chinese proverbs

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Introduction	20
Engineers create	20
Baddeck Steps	20
Abbreviations	23
Currency	23
Engineering Institutions	23
Dual AME Certification - Distinction	24
The “King’s Regulations & Orders” - KR&O	27
KR&O for the RAF and ACI, UK / KR&O-RCAF and ABI, Canada	27
(Deals with : Constitutional law - Distribution of legislative authority)	27
KR&O - Chapter 12 Section II - Regulations to Ensure the safety of Aircraft	27
702 - Maintenance, Inspection and Testing of Aircraft A.k.a “Aircraft Maintenance Orders”	27
702.1 Object, Purpose	27
702.2 Issue	27
702.3 Responsibility	27
702.5 Maintenance Schedules	28
702.6 Inspections	28
702.7 Testing	28
706 Overloading of Aircraft	29
707 Modifications	29
708 Defective Parts and Experimental Equipment	29
709 Airworthiness	29
"Passed by Parliament"	30
Canadian Military Policy	30
The UK & Canadian Air Force - legal basis	30
“As framed, question no.1 must be answered in the negative...”	34
Ultra Vires-Intra Vires	34
Invalid excess of authority or power exercised by an entity.	34
Dominion Legislation of Aviation - 1919	36
“Merchant Airmen”	36
The Role of Officers.	38
Control of Aeronautics - The Air Board Act	39
2. Air Regulations	40
2 Preliminary Surveys for Operations	40
4. Scientific Research	41

5. Meteorological Development	41
6. Wireless Installations and Navigators' Certificates	41
7. Aircraft and Equipment	41
8. Mapping	42
9. Canada's "Air Force"	42
10. Aeronautic Intelligence	42
History, a definition with three distinct meanings.	44
I Read, I Think : Therefore...	44
Ground Engineers UK / AIR Engineers Canada	44
Ground Engineer Training materials	44
A	45
Canadian Aviation Time line	46
British Imperial Aviation - 1803	46
British Imperial Aviation - 1806	46
British Imperial Aviation - 1809	46
British Imperial Aviation - 1819	46
British Imperial Aviation - 1846	46
British Imperial Aviation - 1853	47
British Imperial Aviation - 1854	47
British Imperial Aviation - 1855	47
British Imperial Aviation - 1861	47
British Imperial Aviation - 1862	47
British Imperial Aviation - 1863	47
British Imperial Aviation - 1866	47
Canadian Aviation - 1867	48
Canadian Aviation - 1878	48
Canadian Aviation - 1884	51
Canadian Aviation - 1885	52
British Civil Service Commission - Candidates for civil employment	52
Canadian Aviation - 1886	55
The "Playfair system" and the "Ridley Commission"	55
Canadian Aviation - 1888	55
Canadian Aviation - 1889	56
The Interpretation Act - 1889	56
Canadian Aviation - 1890	56
Canadian Aviation - 1900	56
Canadian Aviation - 1902	56
Canadian Aviation - 1903	56

## Notes on "Civil Aviation"

Canadian Aviation - 1904	58
Canadian Aviation - 1905	58
Canadian Aviation - 1906	58
Canadian Aviation - 1907	58
Canadian Aviation - 1908	59
Canadian Aviation - 1909	60
Canadian Aviation - 1910	63
1910 Int'l Juridic Committee on Aviation : Book I - "Public Aerial Law"	63
1910 Int'l Juridic Committee on Aviation : Book II - Private (Civil) Aerial Law	65
Canadian Aviation - 1911	100
Canadian Aviation - 1912	105
Canadian Aviation - 1913	126
Royal Engineer Training - 1914	129
Canadian Aviation - 1914	130
Canadian Aviation - 1915	155
Canadian Aviation - 1916	217
Canadian Aviation - 1917	236
1917 British War Cabinet Report	270
Canadian Aviation - 1918	290
The power of delegation - a long accepted principle of British public law	324
Appendix ??? : What's Missing: Statutory Guidance on Aeronautical Delegations	325
Statutory Guidance on Aeronautical Delegations and AME Licence Holders	325
Overseas Military Forces of Canada - 1918	328
Provisions of the memorandum setting out tentative arrangements for the organisation of a Canadian Air Force 1918	337
Organisation of the Canadian "Air Force" 1918	337
Canadian Bureau of Aeronautical Information 1918	338
1919 : MILITARY, NAVAL AND AIR CLAUSES - PARIS PEACE CONFERENCE	341
Canadian Aviation - 1919	346
<b>R.A.F. Officers (Technical - Pay) 1919</b>	<b>373</b>
1919 : EDUCATIONAL DEVELOPMENTS IN THE DOMINION OF CANADA	434
1919 : Royal Commission on Industrial Training and Technical Education	437
Royal Commission on Industrial Training and Technical Education, 1910	437
Dominion of Canada - Technical Education Act, 1919	437
1919 - 1925 : Lloyd's Register	440
British Aviation 1920's - 1930's	503
<b>AIR MINISTRY Air Publication 1208 - Airworthiness Handbook for Civil Aircraft VOL. II</b>	<b>504</b>
<b>- INSPECTION</b>	<b>504</b>
Canadian Aviation - 1920	508
CIVIL SERVICE COMMISSION OF CANADA - Air Board Vacancies	511
Air Station Superintendent,	511



## Notes on "Civil Aviation"

Air Sub-Station Superintendent,	511
Air Equipment Officer	512
Air Photographic Inspector	512
Air Wireless Inspector,	513
Airship Pilot	514
Air Pilot,	514
Air Foreman Mechanic	515
Air Photographer,	515
Air Wireless Operator.	515
The Policy of the Air Board in Canada	524
Aeronautical Intelligence Officer	532
The Need for Stringency.	548
THE INSTITUTE OF AERONAUTICAL ENGINEERS.	552
PURCHASE OF DISCHARGE JFROM THE ROYAL AIR FORCE.	552
" WAKEFIELD " SCHOLARSHIPS FOR R.A.F. CADETS.	553
Director, Technical, Air Board (Technical Director)	554
Superintendent Aircraft Repair Section	554
Superintendent - Engine Repair Section	555
Senior Civil Service Examiners	555
May 1920 : Ottawa : Air Board of Canada : Bulletin No. 1	566
Canadian Aviation - 1921	599
Air Certificate Examiner	678
Air Engineer	680
Canadian Aviation - 1922	684
AIR NAVIGATION ORDER, 1922.	690
Canadian Aviation - 1923	697
Canadian Aviation - 1924	703
1924 - BRITISH EMPIRE - THE KING's ENGINEERS - THE ROYAL ARMY's ENGINEER SERVICE	712
Canadian Aviation - 1925	725
Canadian Aviation - 1926	731
Canadian Aviation - 1927	775
"Air Engineer Ranks"	775
Canadian Aviation - 1928	779
Canadian Aviation - 1929	831
Canadian Aviation - 1930	865
Canadian Aviation - 1931	878
Canadian Aviation - 1932	887

## Notes on "Civil Aviation"

Canadian Aviation - 1933	892
Canadian Aviation - 1934	897
Canadian Aviation - 1935	901
Canadian Aviation - 1936	903
Canadian Aviation - 1937	908
1933 : British Companies operating "Air" Lines	928
Canadian Aviation - 1938	929
Canadian Aviation - 1939	936
Canadian Aviation - 1940	950
Canadian Aviation - 1941	953
Canadian Aviation - 1942	965
Canadian Aviation - 1943	968
Canadian Aviation - 1944	973
Canadian Aviation - 1945	994
Canadian Aviation - 1946	998
Canadian Aviation - 1947	998
Canadian Aviation - 1948	1029
Canadian Aviation - 1949	1034
Canadian Aviation - 1950	1036
Canadian Aviation - 1951	1038
Canadian Aviation - 1952	1047
Canadian Aviation - 1953	1047
Canadian Aviation - 1954	1048
Canadian Aviation - 1955	1050
Canadian Aviation - 1956	1050
Canadian Aviation - 1957	1050
Canadian Aviation - 1958	1050
Canadian Aviation - 1959	1052
Canadian Aviation - 1960	1054
Canadian Aviation - 1961	1057
Canadian Aviation - 1962	1057
Canadian Aviation - 1963	1057
Canadian Aviation - 1964	1057
Canadian Aviation - 1965	1058
Canadian Aviation - 1966	1058
Canadian Aviation - 1967	1059
Canadian Aviation - 1968	1059
Canadian Aviation - 1969	1061
Canadian Aviation - 1970	1063
Canadian Aviation - 1971	1068

## Notes on "Civil Aviation"

Canadian Aviation - 1972	1068
Canadian Aviation - 1973	1068
Canadian Aviation - 1974	1068
Canadian Aviation - 1975	1068
Canadian Aviation - 1976	1069
Canadian Aviation - 1977	1069
Canadian Aviation - 1978	1069
Canadian Aviation - 1979	1069
Canadian Aviation - 1980	1069
Canadian Aviation - 1981	1069
Canadian Aviation - 1982	1070
Canadian Aviation - 1983	1075
Canadian Aviation - 1984	1075
Canadian Aviation - 1985	1075
Canadian Aviation - 1986	1075
Canadian Aviation - 1987	1075
Canadian Aviation - 1988	1075
Canadian Aviation - 1989	1079
Canadian Aviation - 1990	1079
Canadian Aviation - 1991	1079
Canadian Aviation - 1992	1080
Canadian Aviation - 1993	1081
Canadian Aviation - 1994	1082
Canadian Aviation - 1995	1082
Canadian Aviation - 1996	1082
Canadian Aviation - 1997	1083
Canadian Aviation - 1998	1086
Canadian Aviation - 1999	1088
Canadian Aviation - 2000	1090
Canadian Aviation - 2001	1091
Canadian Aviation - 2002	1091
Canadian Aviation - 2003	1091
Canadian Aviation - 2004	1091
Canadian Aviation - 2005	1091
Canadian Aviation - 2006	1092
Canadian Aviation - 2007	1092
Canadian Aviation - 2008	1092
Canadian Aviation - 2009	1093
Canadian Aviation - 2010	1093
Canadian Aviation - 2011	1093

## Notes on "Civil Aviation"

Canadian Aviation - 2012	1093
Canadian Aviation - 2013	1093
"Prescribed Trades" - Canada	1095
highly technical legislation	1095
Canadian Aviation - 2017	1097
The Birth of "Air Regulation" ....	1097
Air Regulation in the United Kingdom (Imperial Britain)	1100
THE AERO CLUB OF THE UNITED KINGDOM 1909	1100
influence of The AERO CLUB of the United Kingdom on early aeronautics	1100
Royal Aero Club (R.Ae.C) - Aviator's Certificate Rules - 1st March 1910	1101
ROYAL AERO CLUB "SPECIAL" CERTIFICATE.	1102
<b>"A Second Englishman Flies"</b>	<b>1103</b>
"FLIGHT" the Oldest Weekly Aviation Journal in the World	1103
Civil Flying in Imperial Britain: United Kingdom & Commonwealth 1919	1105
Reason for the Air Ministry	1105
The Imperial British Air Ministry and Regulation of the Air : 1919	1106
Air Navigation Regulations	1106
Accidents	1106
Aerodromes and Licensing	1106
Collation of Information	1106
Air Ministry Staff	1107
<b>Imperial British Air Ministry : announcements : 1919</b>	<b>1108</b>
Application of the Regulations - National Control of Aviation	1108
Inspection of Aircraft at Aerodromes	1108
Aircraft Military Markings	1108
Air Ministry Licenses	1108
<b>Imperial British Air Navigation : Regulations</b>	<b>1109</b>
The framing of the Air Navigation Regulations	1109
The Duties of a Ground Engineer	1109
Examination of Ground Engineers for Licensing	1110
Supervision of Ground Engineers during Work	1112
<b>SUPPLEMENTARY AIR REGULATIONS 1919</b>	<b>1112</b>
Licensing of Personnel	1112
General Knowledge	1113
Certificates of Airworthiness	1113
"TYPE" AIRCRAFT	1114
"SUBSEQUENT TYPE" AIRCRAFT	1115
APPROVAL OF WORKMANSHIP AND MATERIALS	1115
Certification of Aircraft of the "same type"	1116
Imperial British Board of Trade : Licensing of Competent Persons	1117

## Notes on "Civil Aviation"

Ground Engineers	1117
Applications for Engineer licences	1119
Certificates of Safety of Aircraft : 1919-	1121
Instructions for Use of Log Books	1121
"Journey Log" : Information to be noted	1121
"Aircraft Log" : Information to be noted within	1122
"Engine Log" : Information to be noted within	1122
Signal Log, Information to be noted	1122
Air Ministry Specimen sheets, Information to be noted	1123
DIARY OF FORTHCOMING RAeS EVENTS	1124
Air Ministry publication No.970 (Air Pub.970)	1125
Structural design requirements for aeroplanes of the Royal Navy and Royal Air Force	1125
Air Ministry publication No.1208 (Air Pub.1208)	1125
Air Ministry publication No.1208 (Air Pub.1208) Vol. I - Design Section	1125
Air Ministry publication No.1208 (Air Pub.1208) Vol. II - Inspection Section	1125
<b>Aeroplane General Sundries (A.G.S) - Standard parts in 1919</b>	<b>1125</b>
Aeroplane General Sundries Ltd.	1125
<b>Air Ministry Notices</b>	<b>1126</b>
Air Ministry Notices : List of Notices to Airmen	1127
Notice No. 83 of 1926 : Fitting of Safety Belts	1127
Notice No 140 : Authorised Patterns of Log Books to be used SECTION V "Log Books"	1127
Listing of UK Air Ministry Notices to Ground Engineers	1128
Air Ministry Notices to Ground Engineers : 1919 to 1920	1128
EXAMINATIONS FOR AVIATION GROUND ENGINEERS - 1920	1128
Notice No. 1 of 1920 acquainting ground engineers with technical information	1129
Notice No. 2 of 1920 : Petrol-Resisting Rubber Tubing and Connections	1130
Notice No. 3 of 1920 : Streamline Flying Wires	1131
Notice No. 4 of 1920 : Safety Belts and Harnesses	1132
Notice No. 5 of 1920 : Control Pulleys and Running Cables	1133
Notice No. 6 of 1920 : Napier "Lion" Engines - Oil Filters	1134
Notice No. 7 of 1920 : Avro 504 and 536 Engine Strut Failures	1135
Notice No. 8 of 1920 : Fitting of Ballast in Aircraft	1136
Notice No. 9 of 1920 : Defects in Aircraft Timber	1137
Notice No. 10 of 1920 : Fuel System Contamination	1138
Notice No. 11 of 1920 : Strength of Control Cables	1139
Notice No. 12 of 1920 : Avro 504 and 536 engine strut failures	1140
Notice No. 13 of 1920 : Handley Page 0/400 Tail Plane Fittings	1141
Notice No. 14 of 1920 : 120 & 160 hp Beardmore Engine carb heating	1142
Notice No. 15 of 1920 : High Compression Pistons in Siddeley Engines	1143
Notice No. 16 of 1920 : Ground Engineer License renewals & A.M Notices	1144

## Notes on "Civil Aviation"

Notice No. 17 of 1920 : Entries required in Log Books	1145
<b>Air Ministry Notices to Ground Engineers : 1921</b>	<b>1146</b>
Notice No. 1 of 1921: Strut Rot in Lower Sockets	1146
Notice No. 2 of 1921 : Top Overhaul of Engines After Storage	1147
Notice No. 3 of 1921 : Rolls-Royce "Eagle" Engines : Fitting of Epicyclic Gear	1148
Notice No. 4 of 1921 : 80 and 110 H.p Le Rhone : Weak Valve Rocker Support	1149
Notice No. 5 of 1921 : Dual Control in Passenger Aircraft	1150
Notice No. 6 of 1921 : Throttle Control for Napier "Lion" Engines	1151
Notice No. 7 of 1921 : Over-tightening of Bracing Wires	1152
Notice No. 8 of 1921 : Painting Over Inspection Stamps	1153
Notice No. 9 of 1921 : Bristol "Tourer" and "Fighter" : Aileron Control Pulleys	1154
Notice No. 11 of 1921 : De Havilland 4 and 4a : Fuselage Wiring Plates	1155
<b>Air Ministry Notices to Ground Engineers : 1922</b>	<b>1156</b>
Notice No. 1 of 1922 : Maintenance of A.V. 8 and A.V. 12 Type Magnetos	1156
Notice No. 2 of 1922 : Avro 504K Type Aircraft : Gravity Tanks	1157
Notice No. 3 of 1922 : "Petroflex" Tubing and Jointing	1158
Notice No. 4 of 1922 : Bristol "Tourer" and "Fighter" : Aileron Controls	1159
Notice No. 5 of 1922 : Avro 504K Type Aircraft : Lift Wire Fittings	1160
Notice No. 6 of 1922 : Re-balancing of Propellers after Re-tipping or Repainting	1161
Notice No. 7 of 1922 : Repair or Overhaul of Licensed Aircraft : Approval of Materials	1162
Notice No. 8 of 1922 : Flexible Rubber Connections in Aircraft	1163
Notice No. 9 of 1922 : Inspection and Certification of Instruments	1164
Notice No. 11 of 1922 : Rolls-Royce "Eagle VIII" Engines : Friction Anchorage	1167
Notice No. 12 of 1922 : W/T Installation and Earth System : Standard Requirements	1168
Notice to Airmen No. 92 of 1922 : Swinging of Compasses in Aircraft	1168
<b>Air Ministry Notices to Ground Engineers : 1923</b>	<b>1169</b>
Notice No. 1 of 1923	1169
Notice No. 2 of 1923 : High Tensile Steel Fork Ends and Turnbuckles	1170
Notice No. 3 of 1923 : Napier "Lion" Engine Valves and Seats	1171
Notice No. 4 of 1923	1172
Notice No. 5 of 1923 : Maintenance of A.V.8 and A.V.12 Type Magnetos (Amendment)	1173
Notice No. 6 of 1923 :	1173
Notice No. 7 of 1923 :	1173
Notice No. 8 of 1923 :	1173
Notice No. 9 of 1923 :	1173
Notice No. 10 of 1923 :	1173
Notice No. 11 of 1923 :	1173
Notice No. 12 of 1923 :	1173
Notice No. 13 of 1923 :	1173
Notice No. 14 of 1923 :	1173

## Notes on "Civil Aviation"

Notice No. 15 of 1923 :	1173
Notice No. 16 of 1923 :	1174
<b>Air Ministry Notices to Ground Engineers : 1924</b>	<b>1175</b>
Notice No. 1 of 1924 : The Air Navigation Order, 1923	1175
Notice No. 2 Of 1924 : Engine Control Switches	1176
Notice No. 3 of 1924 : Internal Inspections of Fabric-Covered Components	1177
Notice No. 4 Of 1924 : Aircraft Cable wrapping / lacing cord	1178
Notice No. 5 of 1924 : repair of Blow-Holes in Engine Castings by soldering	1179
Notice No. 6 Of 1924 : Operating Speeds of Civil Aircraft Engines	1180
Notice No. 7 Of 1924 : Avro 504K Lift Wire Fittings	1181
Notice No. 8 Of 1924 : "I" Section Spars in Bristol F.2.B. Tourer	1182
Notice No. 9 Of 1924 : Drilling of Main Plane Spars in Avro 504, 536, 548 and 552	1183
Notice No. 10 of 1924 : Inspection Marks on Aircraft and/or Aero Engines	1184
<b>Air Ministry Notices to Ground Engineers : 1925</b>	<b>1186</b>
Notice No. 1 of 1925 : Construction of D.H.4, D.H.9 and D.H.9a Main Plane Spars	1186
Notice No. 2 of 1925 : "Petroflex" Tubing	1187
Notice No. 3 of 1925 : Index of Operative [in-force] Notices	1188
Notice No. 4 of 1925 : Rolls Royce "Falcon III" Engine : Modifications	1189
Notice No. 5 of 1925 : Rolls Royce "Eagle VIII" Engine: Modifications	1190
Notice No. 6 of 1925 : Siddeley "Puma" Engines: Modifications	1192
Correction to the Notice to Ground Engineers No. 6 of 1925	1193
Notice No. 7 of 1925 : Inspection of Instruments (Licence Category "E" )	1194
<b>Air Ministry Notices to Ground Engineers : 1926</b>	<b>1195</b>
Notice No. 1 of 1926	1195
Notice No. 2 of 1926 : Plunger Switches of R.A.F. Mark H type	1196
Notice No. 3 of 1926 : Separating Clips for Streamline Bracing Wires	1197
Notice No. 4 of 1926	1198
Notice No. 5 of 1927 : Box Spars In D.H.4and D.H.9 Aircraft	1199
Notice No. 4 of 1926 : Magnesium Alloy Castings	1200
Notice No. 7 of 1926	1201
<b>Air Ministry Notices to Ground Engineers : 1927</b>	<b>1202</b>
Notice No. 3 of 1927 : Tightening of Nuts, Locknuts, etc.	1202
Notice No. 8 of 1927 : Modifications to "Moth" Aircraft w/ "Cirrus" Engine	1203
Notice No. 9A of 1927 : Repairs to Civil Aircraft	1204
Notice No. 9B of 1927 : Engine Installation Requirements: Fire Prevention	1205
<b>Air Ministry Notices to Ground Engineers : 1928</b>	<b>1206</b>
Notice No. 1 of 1928 : Avro 504N "Lynx" Modifications	1206
Notice No. 2 of 1928 : "Zenith" Carburettor Type 42/F.S.L. Fitted to "Cirrus" Mk. I. Engines	1207
Notice No. 3 of 1928 : AVRO Avian Type Aircraft : Bottom Main Plane Hinge Joint Fitting	1208
Notice No. 4 of 1928 : D.H.6 Aircraft: Essential Modifications	1209

## Notes on "Civil Aviation"

Notice No. 5 of 1928 : Safety Belts in Aircraft	1210
Notice No. 6 of 1928 : Avro 504.N : Essential Modifications	1211
<b>Air Ministry Notices to Ground Engineers : 1929</b>	<b>1213</b>
Notice No. 17 of 1929 : Maintenance of Cockpits, etc., in Watertight Condition	1213
Notice No. 18 of 1929 : Avro "Avian" : Bottom Front Centre Section Spars	1214
Notice No. 19 of 1929 : Doping of Civil Aircraft	1215
Notice No. 1 of 1929 : Modifications to Aircraft and / or engines	1216
Notice No. 2 of 1929 : Tightening Cylinder Head Holding Down Studs	1217
Notice No. 3 of 1929 : Avro Avian Aircraft : Modification to Bottom Rear Hinge Joint	1218
Notice No. 5 of 1929 : Index of Notices to Ground Engineers : 1920 - 1928	1219
Notice No. 14 of 1929 : Formation of Bubbles in Aircraft Compasses	1220
Notice No.13 of 1929 : Corrosion under Brass Identification Clips : Streamline Wires and Tie-Rods	1221
Notice No. 23 Of 1929 : Safety Belts and Safety Harness	1222
Notice No. 24 of 1929 : Advertising Streamers and Banners on Aircraft	1223
Notice No. 25 of 1929 : Effects of Timber Shrinkage	1224
Notice No. 7 of 1929 : Maintenance of Aircraft and Engine : Log Books	1225
Notice No. 22 of 1929 : D.H. 60 Aircraft : Retaining Washer, Part No. H. 16132, for Aileron King Post Ball Joint	1226
Notice No. 7 of 1930 : "Moth" Aircraft D.H.60, 60X, G, and M	1227
<b>Air Ministry Notices to Ground Engineers : 1930</b>	<b>1228</b>
Notice No. 18 of 1930. : Examination of Applicants for Ground Engineer's Licences	1228
Blackburn " Bluebird " Mark IV Aircraft :	1229
Inspection Tabs on Control and Bracing Cables	1230
Provision of Fireproof Bulkheads : Temporary relaxation of Air-worthiness Requirements for Certain Aircraft	1232
Manufacture and Inspection of Aircraft Parts to Drawings	1233
Ground Engineers Licensed in Categories "A" and "C" : Distinction between Duties	1234
Discontinuous Elevators : Covering of Wooden Airscrews : Fireproof Bulkheads : Protection of Dual Controls	1235
Fireproofing of Smoking Compartments	1236
Napier "Lion" Engine : Tightening of Nuts on Master Connecting Rods	1237
Compasses for Civil Aircraft	1238
Slackness in the Operating Mechanism of Flying Controls	1239
Blackburn "Bluebird," Mark IV Aircraft: Oleo Leg Attachment to Fuselage	1240
No. 6 of 1930 : Safety Belts and Safety Harness	1241
No. 37 of 1930 : Provision of Safety Belts or Harness in Closed Cockpit Aircraft	1243
No. 38 of 1930 : Heating Systems of Cockpits and Cabins	1244
No. 39 of 1930 : D.H. 80.A." Puss Moth " Aircraft : Rudder Control Lever	1245
No. 40 of 1930 : Simmonds " Spartan " Aircraft, fitted with Main Planes of Symmetrical Section	1246
Notice No. 41 of 1930. : Examination of Applicants for Ground Engineer's Licences	1247
Notice No. 42 of 1930 : Avro 504 .K and 504 .N Aircraft : Discontinuous Elevators	1248
Notice No. 43 of 1930 : Certificates of Airworthiness—Acrobatic Category	1249
Notice No. 44 of 1930	1250



## Notes on "Civil Aviation"

Notice No. 20 of 1930 : Certification in Log Books	1251
Notice No. 21 of 1930 : D.H. 60 X & G Wooden Fuselage "Moth" Aircraft with Gipsy, Cirrus III or Hermes Engine : Modification of Front Engine Brackets	1252
Notice No. 22 of 1930 : "Notices to Aircraft Owners and Ground Engineers"	1253
Notice No. 13 of 1930 : High-Tensile Steel Fork Joints A.G.S. 168 to 178, and High-Tensile Steel Turnbuckles A.G.S. 138 to 149	1254
Notice No. 23 Of 1930 : Aircraft Fitted with Cirrus Engines : Removal of Air Strangling Device	1255
Notice No. 14 of 1930 Napier " lion " Engine : Tightening of Nuts on Master Connecting Rods	1256
Notice No. 15 of 1930 : Blackburn " Bluebird," Mk. IV Aircraft : Rudder Bar	1257
Notice No. 16 of 1930 : Genet Major Engine : Inspection and Replacement of Airscrew Hubs	1258
Notice No. 20 of 1930 : Certification in Log Books	1259
No. 21 of 1930 : D.H.60 X . & G . Wooden Fuselage "Moth" Aircraft with Gipsy, Cirrus III or Hermes Engine : Modification of Front Engine Brackets	1260
Aircraft Fitted with Cirrus Engines : Removal of Air Strangling Device	1261
Air Ministry Notices to Ground Engineers : 1931	1262
NOTICES No. 24 of 1931: Modification of Sutton Harness	1262
Notice to Pilots - Pilot's Series A. No. 3 of 1931 : Air Navigation Regulations	1262
NOTICES No. 25 of 1931: D.H. 60X, G & M "Moth" Aircraft. Main Plane Locking Bolts	1263
Air Ministry Notices to Ground Engineers : 1932	1263
Air Ministry Notices to Ground Engineers : 1933	1263
Air Ministry Notices to Ground Engineers : 1934	1263
Air Ministry Notices to Ground Engineers : 1935	1263
Air Ministry Notices to Ground Engineers : 1936	1263
Air Ministry Notices to Ground Engineers : 1937	1263
Air Ministry Notices to Ground Engineers : 1938	1263
Air Ministry Notices to Ground Engineers : 1939	1263
Air Ministry Notices to Ground Engineers : 1940	1263
Air Ministry Notices to Ground Engineers : 1941	1263
Air Ministry Notices to Ground Engineers : 1942	1263
Air Ministry Notices to Ground Engineers : 1943	1263
Air Ministry Notices to Ground Engineers : 1944	1263
Air Ministry Notices to Ground Engineers : 1945	1263
Air Ministry Notices to Ground Engineers : 1946	1263
Air Ministry Notices to Ground Engineers : 1947	1263
Air Ministry Notices to Ground Engineers : 1948	1263
Air Ministry Notices to Ground Engineers : 1949	1263
Air Ministry Notices to Ground Engineers : 1950	1263
Air Ministry Notices to Ground Engineers : 1951	1263
Air Ministry Notices to Ground Engineers : 1952	1263

## Notes on "Civil Aviation"

Air Ministry Notices to Ground Engineers : 1953	1263
Air Ministry Notices to Ground Engineers : 1954	1263
Air Ministry Notices to Ground Engineers : 1955	1264
Air Ministry Notices to Ground Engineers : 1956	1264
Air Ministry Notices to Ground Engineers : 1958	1264
Air Ministry Notices to Ground Engineers : 1959	1264
Air Ministry Notices to Ground Engineers : 1960	1264
Air Ministry Notices to Ground Engineers : 1961	1264
Air Ministry Notices to Ground Engineers : 1962	1264
Air Ministry Notices to Ground Engineers : 1963	1264
Air Ministry Notices to Ground Engineers : 1964	1264
Air Ministry Notices to Ground Engineers : 1965	1264
Air Ministry Notices to Ground Engineers : 1966	1264
Air Ministry Notices to Ground Engineers : 1966	1264
Air Ministry Notices to Ground Engineers : 1967	1264
Air Ministry Notices to Ground Engineers : 1968	1264
Air Ministry Notices to Ground Engineers : 1969	1264
Air Ministry Notices to Ground Engineers : 1970	1264
Air Ministry Notices to Ground Engineers : 1971	1264
Air Ministry Notices to Ground Engineers : 1972	1264
Air Ministry Notices to Ground Engineers : 1973	1264
Air Ministry Notices to Ground Engineers : 1974	1264
Air Ministry Notices to Ground Engineers : 1975	1265
Air Ministry Notices to Ground Engineers : 1976	1265
Air Ministry Notices to Ground Engineers : 1977	1265
Air Ministry Notices to Ground Engineers : 1978	1265
Air Ministry Notices to Ground Engineers : 1979	1265
Air Ministry Notices to Ground Engineers : 1980	1265
Policy on proposed transfer of responsibility of Notices to Aircraft Owners and Ground Engineers from Air Ministry to Air Registration Board - 1943 -1944	1265
Highlights from the "FLIGHT" Journals regarding:	1265
Resettlement of Ex-RAF officers and men post WW1	1265
The Ban on Civilian Flying	1273
Forest Protection in Canada	1273
AVIATION CLASSES	1274
Notice to Airmen No. 15 of 1929 : Maintenance of Aircraft and Engine Log Books	1274
ENGINEERS - Examination Successes!	1274

## Notes on "Civil Aviation"

Flight Cadetships for R.A.F Aircraft Apprentices : February 1928	1276
FLYING IN CANADA : Club Movement and Air Survey	1276
The "R.AE.S" and the "INST.AE.E"	1278
ROYAL AERONAUTICAL SOCIETY	1278
Official Notices:	1278
RAeS : UK Aircraft : "Data Sheets"	1279
Royal Aeronautical Society "RAeS" : Associates	1279
Notes for the Guidance of Persons wishing to obtain Private Pilots' Licences (Class A)	1279
<b>Flight of private British flying machines within Great Britain and Northern Ireland</b>	<b>1279</b>
PROGRESS OF UK CIVIL AVIATION	1280
Annual Report on the Period April 1, 1924, to March 31, 1925	1280
In Parliament (UK)	1281
R.A.F Ground Engineers' Licenses	1281
Britain's Airworthy Aircraft	1282
Civil Aviation	1282
The Requirements & Difficulties of (Civilian) Air Transport	1282
Disposition of surplus aircraft and materiel	1283
Everything was sacrificed to obtain performance	1284
Examination for Aviation Ground Engineers	1284
The Civil Aviation Branch of the Department of National Defence, Canada	1285
Canadian report, for the quarter ending September 30, 1931	1285
Annual Air Force Dinner	1285
<b>The 4th annual Independent Air Force Dinner (1922)</b>	<b>1285</b>
Aviation Education / Aviation Schools	1285
<b>The International Correspondence Schools "I.C.S" &amp; Aviation Courses</b>	<b>1285</b>
<b>The Question of "Air-Worthy" Certificates</b>	<b>1286</b>
<b>France's Policy in the Air</b>	<b>1286</b>
"A Complete Course of Instruction" - Ground Engineer Training	1287
A Complete course of Instruction for Ground Engineers A.B.C.D. & X Licenses - 1937	1287
Correspondence course Textbooks 1925 - 1950	1288
Definitions	1292
"Aeronautical Ground Engineer" - British, 1919	1292
"AIR Engineer" - Canada, 1920	1292
"Ground Engineer" - British	1292
"Aircraft Maintenance Engineer" - British, 1968	1292
"Aircraft Maintenance Engineer" - Canada, 1968	1293
"Aircraft Maintenance Engineering" - American	1293
U.S. Interpretation of the term "AIRWORTHY"	1293
"Instructions for Continued Airworthiness"	1293

"Certification Maintenance Requirements"	1294
Abbreviations	1295
British Abbreviations - WW1	1295
The "AIR BOARD"	1297
ACCIDENTS INVESTIGATION COMMITTEE.	1297
ADHESIVES	1297
AERIAL OPERATIONS COMMITTEE.	1297
AERODYNAMICS	1298
AERONAUTICAL RESEARCH COMMITTEE	1298
AERONAUTICS ADVISORY TECHNICAL SUR-COMMITTEES	1298
AIR CONFERENCE	1298
AIR-SCREW DESIGN COMMITTEE	1298
AIRSHIPS.	1298
AIR TRANSPORT SUB-COMMITTEE	1298
ALLOYS RESEARCH COMMITTEE	1299
ALUMINIUM CORROSION. See S.I.K	1299
AMERICAN AVIATION MISSION	1299
CIVIL AERIAL TRANSPORT COMMITTEE	1299
CIVIL AVIATION ADVISORY COMMITTEE AND (LATER) BOARD.	1299
CIVIL AVIATION DEPARTMENT	1299
COMMISSIONS BOARD (R.F.C.).	1300
CONTRACTS FOR CLOTHING, COURT OF INQUIRY	1300
DESIGN.	1300
EDUCATION AND RESEARCH, AERONAUTICS, COMMITTEE	1300
EDUCATION, ARMY, IMPERIAL	1300
ELECTRIFICATION.	1300
ENGINE.	1300
INFORMATION AFFECTING INSURANCE COMMITTEE.	1301
INSTITUTES	1301
INTER-ALLIED AERONAUTICAL COMMISSION OF CONTROL.	1301
INTERNATIONAL COMMISSION ON AERIAL NAVIGATION.	1301
[INTERNATIONAL RADIO COMMUNICATION TECHNICAL COMMITTEE.	1301
INT'L RADIO CONVENTION. GOVERNMENT DEPARTMENTAL CMTE.	1301

INTERNATIONAL SUB-COMMISSION ON AERIAL NAVIGATION.	1301
INVENTIONS, AIR, COMMITTEE.	1301
KITE BALLOONS, ELECTRIFICATION, COMMITTEE.	1301
KITE BALLOONS.	1302
LOAD FACTORS SUB-COMMITTEE.	1302
MEDICAL ADMINISTRATION COMMITTEE.	1302
MEDICAL (CIVIL AVIATION). INTER-ALLIED, SUB-COMMITTEE.-	1302
MEDICAL INVESTIGATION, AIR. COMMITTEE.	1302
MEDICAL SERVICES, AIR, ADVISORY COMMITTEE	1302
METEOROLOGY.	1302
MUSICAL, AIR FORCE, DIRECTORATE.	1302
NAVIGATIONAL INSTRUMENTS COMMITTEE.	1303
ORGANIZATION, AIR, COMMITTEE.	1303
OXYGEN SUPPLY FOR FLYING MEN, INVESTIGATION COMMITTEE.	1303
STAFFS INVESTIGATION COMMITTEE.	1303
STORES ACCOUNTS (AIR MINISTRY) COMMITTEE.	1303
TECHNICAL.	1303
British Ministry of Munitions (of War)	1303
RECONSTRUCTION - UK post WW1	1324
ENGINEERING TRADES (NEW INDUSTRIES) COMMITTEE.	1324
ENGINEERING TRADES (NEW INDUSTRIES) COMMITTEE, BRANCH COMMITTEES.	1325
ENGINEERING TRADES (NEW INDUSTRIES) COMMITTEE, LABOUR PANEL.	1325
ESSENTIAL INDUSTRIES BOARD, CONSTITUTION SUB-COMMITTEE.	1325
—	1325
TRADE and Mines Department War Office - UK	1325
ENGINEERING TRADES AFTER THE WAR, DEPARTMENTAL COMMITTEE of.	1325
Appendices	1327
Appendix A - the orgainsation of The British Empire and Britain -1924-1926	1329
DEPARTMENT OF NATIONAL DEFENCE - ROYAL CANADIAN AIR FORCE branch	1348
Appendix - US Council in Canada 1924-1926	1349
Appendix - The Air Navigation Directions (A.N.D.)	1350
Air Navigation Directions (A.N.D.) 1, 1920	1350
Air Navigation Directions (A.N.D.) 2, 1921	1350

## Notes on "Civil Aviation"

Air Navigation Directions (A.N.D.) 3, 1922	1350
Air Navigation Directions (A.N.D.) 4, 1923	1351
Air Navigation Directions (A.N.D.) 5, 1924	1351
Air Navigation Directions (A.N.D.) 6, 1925	1351
Air Navigation Directions (A.N.D.) 7, 1926	1351
Air Navigation Directions (A.N.D.) 8, 1927	1351
Air Navigation Directions (A.N.D.) 9, 1928	1351
Air Navigation Directions (A.N.D.) 10, 1929	1351
Air Navigation Directions (A.N.D.) 11, 1930	1351
Air Navigation Directions (A.N.D.) 11B, 1931	1351
Air Navigation Directions (A.N.D.) 11C, 1932	1351
The Air Navigation Directions (A.N.D.) 11C	1353
<b>Appendix : Documents Listed / referenced</b>	<b>1354</b>
<b>Appendix : Air Board Staff- Air Foremen / Mechanic lists</b>	<b>1354</b>
Appendix B1: Air Foremen / Mechanics employed during 1919	1354
1918 - 1919 : source ref: report of the Auditor General of Canada, 1918 - 1919	1354
Appendix B2 : Air Foremen / Mechanics employed during 1920	1354
1919 - 1920: source ref: report of the Auditor General of Canada, 1919 - 1920	1354
Appendix B3 : Air Foremen / Mechanics employed during 1921	1355
1921 - 1922: source ref: report of the Auditor General of Canada, 1920-1921	1355
<b>Appendix C : "International Air Traffic Association" [ATA] members : 1919</b>	<b>1361</b>
<b>Appendix D : International Air Transport Association, 1944/5 members</b>	<b>1361</b>
<b>Appendix E : Persons referenced</b>	<b>1362</b>
<b>Aeronautical Institute of Great Britain</b>	<b>1365</b>
Parliamentary Acts - British and Canadian	1366
<b>Defence of the Realm Act - Churchill's 1919 "Air Regulations"</b>	<b>1366</b>
References and Source Materials	1369
British References and Source Materials	1369
TCCA References and Source Materials	1369
<b>Certificate of Airworthiness Order</b>	<b>1370</b>
<b>Engineering and Inspection Manual</b>	<b>1370</b>
<b>APPENDIX G : Canadian "Air Regulations" 1887 - 1970</b>	<b>1372</b>
Canada - Air Regulations 1938	1372
Canada - Air Regulations 1948	1372
Canada - Air Regulations 1954	1372
The Education of "Engineers"	1373
<b>University engineers and study of "government"</b>	<b>1373</b>
Apprentice and Apprenticeship Program	1375

## Notes on "Civil Aviation"

Early books and articles worth reading:	1376
"AERO Engineering" PUBLISHED BY Newnes Ltd, 1938	1378
"AEROPLANE MAINTENANCE AND OPERATION" PUBLISHED BY Newnes Ltd, 1938	1379
GROUND ENGINEERS' LICENCE - COURSES BY Sir Isaac Pitman & Sons, Ltd	1379
LIST OF BOOKS PUBLISHED BY Sir Isaac Pitman & Sons, Ltd	1379
<b>Appendix : Royal Aero Club Certificates List - Pilots</b>	<b>1381</b>
Appendix ?? : THE ENGINEERING JOURNAL - Members relating to Air Engineers / Air Board 1398	
Roosters and Fledglings : Aeronautics Courses of the R.F.C / R.A.F in Canada WW1	1402
Appendix ?? : Canadian Licensed Air Engineers 1919 - 1942	1404

## Introduction

### Engineers create

"SCIENTISTS INVESTIGATE THAT WHICH ALREADY IS; ENGINEERS CREATE THAT WHICH HAS NEVER BEEN" - ALBERT EINSTEIN

Open any textbook on "The Law of Evidence" and look for the awkward compromises in coverage; pay attention to the many idiosyncratic inclusions and omissions that particular authors favour.

Of course, space is limited and selections have to be made.

Yet evidentiary doctrines frequently make little or no real sense unless they are placed in their broader procedural context.

The common lawyer's penchant for distilling out a 'pure' Law of Evidence from a dynamic process of adjudication consequently tends to contribute to the legal profession's reputation for sterile doctrinalism.

It also constitutes a perilous snare for inadequately briefed policymakers who, unless they peer behind the headlines, are likely to grasp only half the story.

(<http://www.oxfordscholarship.com/view/10.1093/acprof:oso/9780199559152.001.0001/acprof-9780199559152-chapter-17>)

## Baddeck Steps

February 13, 1909, **McCurdy** flew a "similar to the Wright's 1903 "Flyer" but much improved" - the most advanced aircraft of its' time - over a distance of one mile at Baddeck, Nova Scotia - the first successful flight in Canada and "in the whole of the British Empire" ... but was it?

The beleaguered Status of the AME of today (Licensed or not) is due in part to the attitudes at the end of the 1st World War by some nations towards the technical officers and men on the ground who enabled the Amazing Men in their Flying machines to step into harm's way.

To understand the impact of 1st World War aviation programs upon Civilian aviation in the United Kingdom - and other nations - a person first needs to comprehend the assumptions and premises generally held at the time, and that requires delving into the historic records and archives.

Recognition of the Engineering efforts from which the dedication to the safety of the Men in the Air by the Men on the Ground, undertaken during those war years, was, and still is heartfelt.

Yet crucial recognition of the Ground-men was rarely stated to the public and in truth very few Men-in-the-Air ever truly knew the full picture of the extensive work the Men-on-the- Ground<sup>2</sup> did behind the scenes before mounting their machines for their first, next, and many times last, flight into harms' way.

What has resulted, is that since 1919, generations of people have misunderstood the inter-related evolution and unique co-requirements of the Design and Ground Engineer - in all forms post 1919 - towards flight safety for Civilian aero-craft.

That information must be re-learned or at least re-visited by today's Aeronautical Engineer, the L-AME & AME as well as elected public officials, so that all may truly understand exactly what an "AME" in both terms actually is.

---

<sup>2</sup> in his Ph.D dissertation (Anthropology and History) paper "EMPIRE IN THE AIR: SPEED, PERCEPTION, AND AIRLINE TRAVEL IN THE ATLANTIC WORLD" University of Michigan 2007, Chandra D. Bhimull stated "It takes a lot of ground work, as well as work on the ground, to turn air into airspace; airspace into imperial space". While the comment is not insignificant, this effort is frequently overlooked by most.



## Notes on “Civil Aviation”

It has been said “What everyone takes for granted no one bothers to record”<sup>3</sup>, and for the large part, the evolution / history of Aviation Maintenance and Engineering is largely taken for granted.

Thankfully amongst all the sources of reference readily available today at least one journalist and publisher had the foresight to record as much as could be documented from the very beginning. That man was Stanley Spooner, and his weekly journal “FLIGHT” was then - and remains today -an astounding compendium of documented aeronautical history.

This study is primarily directed to an elaboration of the economic regulation of commercial aviation in Canada. It is intended to be both a descriptive and critical summary of the present position which so far regard for future prospects. In any case, the words which follow are not exhaustive of the subject.

The reviewer must be left to draw his own conclusions on the success of the endeavour. He can look forward with confidence, however, to possession of perimeters and objectives a fairly complete knowledge of the economic regulation of the industry, in the contemporary context.

The author has adopted what he believes to be a logical and concise approach. The reason for including an historical resume of civil aviation is simple. It is usually difficult to fully understand current policies - public or private - without having at hand an appreciation of persons or events.

Currently, TCCA is entrusted by Parliament and the Canadian public with certain duties. among these duties, ensuring aviation safety is of primary importance.

TCCA uses its regulatory authority and engages with industry stakeholders to ensure that risks to safety are mitigated to deliver the high level of safety expected by most aviation participants and the general public. match the burden of compliance to the expectations of the participants and the public

The “aviation risks” to be assessed include:

- I. Safety risk to the Air Carrier’s customer
- II. Safety risk to other airspace users
- III. Safety risk to People / Property on the ground

Higher levels of identified risk and lower levels of acceptability must necessitate higher levels of engagement between the party delivering information and the prospective participant.

The Canadian Government’s SMS policy must include both the government’s judicial and ministerial departments within the SMS umbrella. All issues affecting and effecting aviation safety need to be identified / reported and assessed for their potential risk to the Canadian public. It stands to reason then that there is a duty to identify to TCCA that AME training may not be meeting or complying with the intended role of the AME or the requirements for educating them..

### **basic safety standards apply**

This purpose does or does not exempt the document holder (AOC) or the inspector/certifier (AME-the inspector/certifier) from legal duties of care and does not establish an absolute defence against commercial liability of the operator to the participant.

Is it within the authority of TC to instruct courts on how to rule regarding legal liability issues or not?

When changes were made to the original structure and role of the AME were they consulted? did they give Consent? did the prospective AME consent to the lower or the higher level of certification?

Where and when was accomplished the delivery of risk information and the procedure for obtaining the consent of prospective participants ?

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<sup>3</sup> Irving Brinton Holley, jr, BUYING AIRCRAFT: MATERIEL PROCUREMENT FOR THE ARMY AIR FORCES pp X

## Notes on "Civil Aviation"

Options for the procedure for obtaining consent to either obtain delegated authority or take on responsibility which is delegated include:

- a) Obtaining signature of prospective participant, thereby giving consent
- b) Obtaining witnessed signature of participant giving their consent
- c) Obtaining written statement of participant giving their consent
- d) Verbal acknowledgement of the applicant giving consent in addition to any of the above

4 Issues or topics that affect the AME - no matter the time period being reviewed:

- 1. Authority
- 2. Accountability
- 3. Responsibility
- 4. Liability

## Abbreviations

### CURRENCY

£ = librae - Pounds Sterling  
S -or / = solidi = shillings or “bob”  
d = denarii = pence  
Guinea (Last minted in 1799) = 21 shillings  
Crown = five shillings  
Florin = two shillings  
Farthing =  $\frac{1}{4}$  d  
  
\$ = Dollars

British standard currency derived from Roman coinage established to facilitate business transactions based on units in 20:1 & 12:1 (L:S & S:D) ratio  
12 “denarii” equaled 1 Roman gold “solidus” (4th-century coin)  
240 denarii were cut from one Roman “libra” of silver,  
240 denarii = one pound, Sterling silver

### ENGINEERING INSTITUTIONS

A.M.I.A.E. : Associated Member of Institute of Automobile Engineers  
A.I.V.I.E.E. : Associate Member of Institution of Electrical Engineers  
A.M.I.E. (Ind.) : Associate Member, Institution of Engineers, India  
A.M.I.Mech.E. : Associate Member Institution of Mechanical Engineers  
A.M.I.N.A. : Associate Member Institution of Naval Architects  
A.M.Inst.B.E. : Associate Member of the Institution of British Engineers  
A.M.Inst.C.E. : Associate Member of Institution of Civil Engineers  
A.M.Inst.T. : Associate Member of the Institute of Transport  
A.M.I.Struct.E. : Associate Member of the Institution of Structural Engineers

“Admission can be obtained only by passing the necessary examinations and satisfying the (Engineering) Council as to the applicants (multiple levels of) practical experience, formal education and character”

GEORGIUS V DEI GRATIA BRITANNIARUM OMNIUM REX FIDEI DEFENSOR INDIAE IMPERATOR  
"George V, by the Grace of God, King of all the Britains, Defender of the Faith. Emperor of India." (Latin)

GEORGIUS V - George V  
DEI GRATIA - by the Grace of God  
BRITANNIARUM OMNIUM REX - King of all the Britains  
FIDEI DEFENSOR - Defender of the Faith  
INDIAE IMPERATOR - Emperor of India

HONI SOIT QUI MAL Y PENSE.  
"Shamed be he who thinks ill of it." (French) Motto of the Order of the Garter, George III.

## Dual AME Certification - Distinction

The Distinction between “Assessment-Based” AME mechanic Certificates and Professional or “Personnel” AME Certification Programs.

The Certificated AMT: Technical foundation, Trades certificated

The Licensed AME: Engineering discipline,

Together they combine to provide employers and the public with the assurance that:

- A. Trades-persons certificated as competent AMT's - but more properly identified as “AMEs without a license” - possess the necessary manual skills, knowledge and experience to competently perform aircraft maintenance tasks.
- B. Individuals identified as “Licensed AMEs” possess the necessary skills, knowledge and experience to perform competently as supervisors, inspectors and certifiers of aircraft maintenance, overhaul and manufacturing processes.

Satisfying the requirements to obtain and maintain CRSP certification gives companies the peace of mind that they are working with a highly qualified resource.

Professional or personnel certification is a voluntary process by which individuals are evaluated against predetermined standards for knowledge, skills, or competencies. Participants who demonstrate that they meet the standards by successfully completing the assessment process are granted

When you see AME after a name, you expect that the person has been through a rigorous process that verifies their formal education, professional practice and professional development and that they have successfully passed a competency based certification examination.

common understanding of a competent registered safety professional who has met the eligibility requirements

The features of “quality professional” or “quality personnel” certification programs

quality assessment-based certificate programs, through the correct instruction and training they provide, play a valuable role in helping individuals to attain occupational / professional competence....

a partial overlap in

An “assessment-based certificate program” is a program granting AME based upon :

- (a) provides instruction and training to aid participants in acquiring specific knowledge, skills, and/or competencies associated with intended learning outcomes;
- (b) evaluates participants’ achievement of the intended learning outcomes; and
- (c) awards a certificate only to those participants who meet the performance, proficiency or passing standard for the assessment(s) (hence the term, “assessment-based certificate program”).

Certificates of attendance or participation are provided to individuals (participants) who have attended or participated in classes, courses, or other education/training programs or events.

The certificate awarded at the completion of the program or event signifies that the participant was present and in some cases that the participant actively participated in the program or event. Demonstration of accomplishment of the intended learning outcomes by participants is NOT a requirement for receiving the certificate; thus, possession of a certificate of attendance or participation does not indicate that the intended learning outcomes have been accomplished by the participant.

These are key distinctions between a certificate of attendance or participation and an assessment-based certificate program.

## Notes on "Civil Aviation"

Apprenticeship is a workplace-based program that teaches people the skills they need in the trades to achieve competencies and perform tasks to industry standards. Typically, an employer sponsors the apprentice.

On-the-job, the apprentice works under the direction of a journey-person. The training combines alternating periods of on-the-job (80 to 85%) and technical training (15 to 20%).

Most apprenticeship programs are four years in length.

An apprentice is hired by an employer, works with a journey-person in order to learn a trade. A certified journey-person is recognised as a qualified and skilled person in a trade, and, therefore, entitled to the wages and benefits associated with that trade.

A certified journey-person is allowed to train and act as a mentor to a registered apprentice.

Journey-persons can sign off on whether apprentices are achieving their key competencies on-the-job and play an important role in developing apprentice skill sets.

According to the 2007 National Apprenticeship Survey, the average time to complete an apprenticeship program is five years.

An individual wishing to become a certified journey-person must pass examination(s). If s/he passes, **a Certificate of Qualification is earned.**

### Skilled Labour Shortage 1

The older average age of many tradespeople and their stated intention to retire suggest that if efforts are not made to train the next generation of skilled workers, Canada's future economic competitiveness will be in serious jeopardy.

### Skilled Labour Shortage 2

Due to baby boomer retirements and an ageing population, Canada is facing a serious skilled labour shortage. The older average age of many tradespeople and their stated intention to retire suggest that if efforts are not made to train the next generation of skilled workers, Canada's future economic competitiveness will be in serious jeopardy.

For the sectors that rely upon tradespeople, apprenticeship is a proven training method that produces productive, highly skilled, and safe employees.

Since it typically takes five years to train an apprentice, industry needs to invest now in order to have the highly skilled tradespeople it needs for the future. A sustained and ongoing commitment to training and to passing down knowledge will be required if skill shortages are to be effectively addressed.

CAF-FCA is interested in gathering further skills shortage and labour market data relevant to the trades. If you know of any reports, please e-mail: [info@caf-fca.org](mailto:info@caf-fca.org)



current approach to the regulation of GA does not demonstrably pass the proportionality test, a key principle of Better Regulation which requires a balance between corrective measures and the severity of the nature of the act being regulated

regulation that manages third party risk

It is impossible to completely mitigate all safety risks CAP 1188 May 2014 Page 9

The highest priorities for the CAA are ensuring the safety of non-participant third parties on the ground and fare-paying passengers flying commercially.

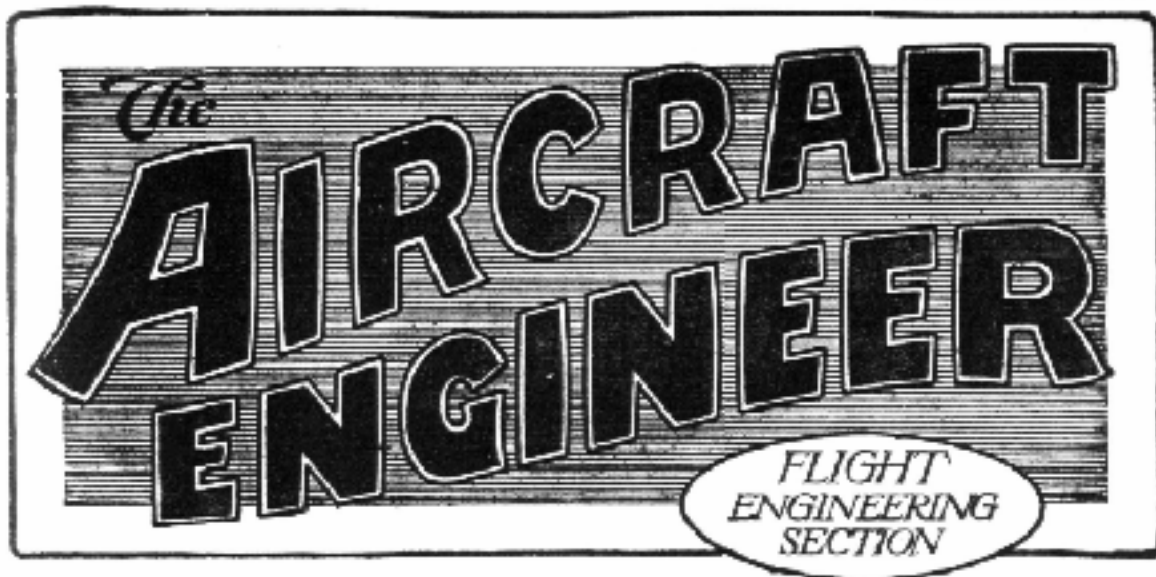
The CAA's statutory duties require us to protect those who are not involved with aviation activities, for example third parties on the ground, as well as those who travel with the primary expectation of arriving safely at their destination, for example commercial passengers. source ref: UK-CAA CAP 1188 GA policy Consultation, May 2014

Decisions about intervention would be applied on the basis of best available evidence, drawn both from other relevant countries and sectors, and the principle of safety standards acknowledgement and consent, sometimes referred to as informed consent.

General aviation is a crucial part of the UK's aviation sector. It trains some of the next generation of pilots and engineers, supports highly-skilled jobs, provides essential services and forms a key part of our cultural heritage.

The UK enjoys an enviable reputation as a place of excellence in aviation. However, the UK GA sector finds itself under increasing strain as costs of operation rise due to fiscal pressures, the application of a European regulatory framework and perceived over regulation by the CAA. Too much prescription in the rules and a lack of proportionality have both impacted adversely on the sector.

regulation intended for the commercial air transport sector should not be read directly across to the GA sector.



# The “King’s Regulations & Orders” - KR&O

KR&O for the RAF and ACI, UK / KR&O-RCAF and ABI, Canada

(Deals with : Constitutional law - Distribution of legislative authority)

## KR&O - CHAPTER 12 SECTION II - REGULATIONS TO ENSURE THE SAFETY OF AIRCRAFT

### 702 - MAINTENANCE, INSPECTION AND TESTING OF AIRCRAFT A.K.A “AIRCRAFT MAINTENANCE ORDERS”

#### 702.1 OBJECT, PURPOSE

- (a) to ensure Airframes, engines are maintained safe and serviceable
- (b) To Define responsibility for inspections and maintenance work
- (c) to ensure proper levels of records are kept of the inspections and maintenance work

#### 702.2 ISSUE

Part I - Describes organisation and defines individual responsibility  
Part II - Describes the “technical detail of Maintenance and Inspections”

#### 702.3 RESPONSIBILITY

- (a) C.O - The Commanding Officer of the Unit is to issue and sign the orders, he is also to amend them from time to time as may be necessary. He is not permitted to delegate his responsibility for the circulation of relevant orders from higher authority. He is to supervise the application of the orders and to co-ordinate the work in the flights, workshops, etc., of the unit.
- (b) **“Officer in Charge-Workshops” is responsible for the inspection and maintenance of aircraft and engines in the workshops. He is also to carry out such Major Inspections and special work as may be directed from time to time.**
- (c) Excepting such work as falls under clause 4 (Records and Forms), a **Flight Commander is entirely responsible for the maintenance of the aircraft in his flight.** Under {702.3} sub-clause (d) he may, however, delegate responsibilities to pilots who are in his opinion competent. He is also responsible within his flight for the adequate circulation of all orders affecting maintenance. He is also to **keep such records of circulation as will ensure that all copies of orders are amended as necessary.**
- (d) Every aircraft which is being flown is to be placed in the charge of a Pilot who is to be responsible for its maintenance. No pilot, other than the Flight Commander, is to have charge of more than two aircraft at any one time.
- (e) **The primary duty of flight NCOs of the rank of sergeant and above is supervision and inspection. Only in exceptional circumstances are they to be detailed to particular aircraft; should this course be necessary the Flight Commander is to take steps to ensure that supervision and inspection are not adversely affected. NCOs are to supervise periodic inspections and are to carry out independent checks organised in such a manner as to ensure each airframe and engine is completely inspected not less than once every six weeks. they are to supervise with particular care, all work done by inexperienced airmen. (1919 UK-ANR created the Engineering Officer rank - the KR&O may be contrary to the ANR)**
- (f) (f) Riggers & Fitters not above the rank of corporal are to be detailed for the maintenance of each aircraft, appropriate numbers are allowed on flight establishments. This employment of each rigger and fitter according to the scale allowed should be continuous on particular airframes and engines and their employment on other aircraft should be avoided as far as possible. The **sub-division of their responsibilities** is to be as follows:
  - (i) The senior fitter on an aircraft is to be **responsible for the care of the engine or engines, engine ignition, starting devices, fuel system, oil system, cooling system and all wiring, piping, controls, instruments and accessories in connection therewith. His responsibility includes the bolts or other devices attaching the parts to the airframe.** The fitter is responsible for the attachment only of wooden airscrews, if a metal airscrew is fitted he is responsible for the whole airscrew and any gearing and controls operating it.
  - (ii) The senior rigger on an aircraft is to be **responsible for the care of all parts other than those for which the fitter is responsible and those for which tradesmen** e.g: armourers, electricians etc., **are allowed** on the strength of the unit.

## Notes on "Civil Aviation"

- (iii) **The flight rigger and fitter NCOs, as appropriate, are to inspect all work done by any other person and to ensure that it does not prejudice the safety of the aircraft in any way. The person doing any such work is to be responsible for reporting to the appropriate NCO on its completion.**

### 702.5 MAINTENANCE SCHEDULES

Airframes and engine type maintenance schedules which describe the maintenance and indicate the frequency with which parts require inspection are published for each type of airframe and engine. *These schedules are for the guidance of officers responsible for drafting part II orders under clause 2.* The schedules may be embodied as part of the orders, but it is to be recognised they will have to be amplified or modified in the unit in order to embody the results of experience or to meet the special local conditions.

### 702.6 INSPECTIONS

- (a) The following types of routine inspection are to be recognised:

- (i) Between flights
- (ii) Daily
- (iii) Periodical
- (iv) For reconditioning or overhaul

**When an aircraft is due for inspection it is to be put "Unserviceable" until the inspection has been carried out.** This is to be done by the person responsible for carrying out the inspection

- (b) Every Aircraft is to be inspected daily by the senior rigger and fitter in charge of it. One hour should normally suffice for this work. After daily inspection the aeroplane may be regarded as serviceable for 24 hours unless a defect is reported or found at a between flight inspection or it becomes due for a periodic inspection or is subjected to abnormal treatment such as a heavy landing or is to be used for night flying (see clause 7 sub-clause (b))
- (c) Every aircraft is to be given periodical inspections at the intervals specified in the airframe or engine type maintenance schedules. **The flight commander may extend these periods by not more than 10 per cent. The authority for this extension is to be entered on the weekly aircraft maintenance form and signed by the flight commander at the time that it is given.**
- (d) The Flight Commander is to give orders for all periodical inspections in the flight daily duty sheet and is also to detail an NCO either to supervise or to carry out the inspection.
- (e) After completing the number of hours flying shown in column A of the table in sub clause (f), airframes may be allotted to the appropriate depot (or contractor) for reconditioning. The continuous use of the airframes up to the maximum flying hours shown in Column B may, however, be authorised by the AOC (or the CO of a carrier) on the recommendation of a board of officers. **This board is to consist of three officers of the general duties branch, one of whom is to be an experienced engineering specialist.** The board must inspect the airframe and the log books. The board may recommend a 1st extension of 100 hrs for landplanes (except where borne on H.M ships) For other types, and subsequent extensions of landplanes, this board may not recommend more than 50 hours. Where aircraft are carried in exposed positions on H.M. ships the number of flying hours before the airframes are examined by a reconditioning board is in no circumstances to exceed that laid down for ship-planes operating from carriers. **The C.O of the aircraft depot (or the A.I.D inspector at the contractor's works) is, on completion of the reconditioning, to furnish a certificate to the effect that all necessary repairs, modifications and renewals have been effected and he is to cause all necessary entries to be made in the log book.**

### 702.7 TESTING

- (a) **In the following circumstances an aircraft is to be tested in the air** by the pilot responsible for it, or by his flight commander, before it is flown by any other pilot:
- (i) After an inspection (under clause 6 (a)) other than a daily inspection.
  - (ii) After any work has been done which is likely to affect the flying characteristics of the aircraft.
  - (iii) After any work has been done on the aircraft arising from a report suggesting a mechanical defect.
  - (iv) After an engine or any of its major components have been changed or adjusted.
  - (v) At units where *ab initio* flying training is being done aircraft are to be tested daily by a fully qualified pilot before being flown by pupils.

**The rigger or fitter who has carried out the replacement or adjustment is, when possible, to be taken as a passenger during such flights.**



## Notes on "Civil Aviation"

- (b) After an engine has been completely overhauled or has had crankshaft or connecting rod bearings, gear wheels or other important working parts (where the nature of the work carried out has been such that interchangeability is not to be depended upon) replaced or refitted, the engine is to be tested and the parts opened up for inspection. The duration of the test should normally be one hour at about nine-tenths of its power, finishing with a period of about 2 minutes at full power. After inspection and re-assembly a test for about ten minutes under similar conditions is to be carried out.

### 706 OVERLOADING OF AIRCRAFT

The C.O of a flying unit will ensure that the gross weight shown in the Weight Sheet Summary for the type of aircraft, is not exceeded without the sanction of the the air or other officer commanding.

### 707 MODIFICATIONS

1. Under no circumstances may any modification which has not received the official sanction of the Air Ministry be made in any airframe or aircraft engine. All modifications which units (other than repair depots) are authorised to carry out are published in Air Ministry Confidential Orders, Technical Orders and Technical Instructions or Air Ministry Weekly Orders. In special cases modifications are authorised by letters or signals from the Air Ministry; these modifications are included in the next issue of Technical Orders. In addition to the above, repair depots are authorised to carry out the modifications named in the reconditioning specification for the type. Applications to make to any airframe or aircraft engine alterations or modifications which have not been sanctioned as above will be made, through the usual channels, to the Air Ministry.
2. The C.O of a Unit will be responsible that:
  1. all officers and such airmen as are immediately concerned are cognisant of the contents of the Air Ministry Air Ministry Confidential Orders, Technical Orders and Technical Instructions & e., in so far as they are individually concerned; and
  2. all modifications sanctioned as in clause 1 are embodied in the airframe or aircraft engines to which they relate, in accordance with the orders issued with them.
3. Where the use of a type of airframe or aircraft engine has been restricted by the Air Ministry pending the incorporation of a modification, a form 443 will be prepared for each aircraft or engine of that type in which the modification has not been completed. The lower half of the form will be attached to the airframe or aircraft engine concerned (where convenient, to the part affected) and will not be removed until the modification has been completed. Where the restrictions do not wholly stop flying, the note at the foot of the form 443 will be amended accordingly.
4. Every approved modification affecting an airframe or aircraft engine will be entered in the log book of that aircraft or engine in accordance with the instructions contained in the log book.

### 708 DEFECTIVE PARTS AND EXPERIMENTAL EQUIPMENT

1. Technical reports on experimental equipment under trial by units other than those coming directly under the Director of Technical Development will be forwarded in triplicate, through the usual channels, to the Air Ministry.

### 709 AIRWORTHINESS

1. When, for any reason, an air or other officer commanding has cause to question the airworthiness, generally or for any particular purpose, of any type of aeroplane, he will report the matter to the Air Ministry. He will use his discretion as to whether or not he shall order the suspension of flying on the particular type in question within his command.
2. Instructions to the service generally regarding the cessation for any reason, of flying on particular types of aeroplanes will be issued by the Air Ministry. The Director of Organisation and Staff Duties will be responsible that all such instructions are made known to the Director of Technical Development, who may at his discretion authorise such aeroplanes to be flown under his instructions at establishments under his control.

## Notes on "Civil Aviation"

### "PASSED BY PARLIAMENT"

"Passed by Parliament" is equivalent to having been given Royal Assent. The material has been obtained from the Debates of the Senate and the House of Commons, from the Journals of both Houses, from the explanatory notes to the Bills, and from the Statutes. The information is presented by session in the following format: the title of the Act and chapter number, the date of Royal Assent, the sponsor, the bill number, and its purpose.

### CANADIAN MILITARY POLICY

Canadian Military policy, well into World War II *was to adopt British military law. ( the 1919 ANR was a Military order to the Air Forces of the Empire. Canada was required to comply...or was it?*

*The history of British military law is, in effect, that of the early history of the Canadian military justice system - and the application of Canadian Military policy.*

*Military law applicable to British land and air forces developed in a different manner than the law applied to British naval forces, ergo:*

*Military law applicable to Canadian land and air forces developed in a different manner than the law applied to Canadian naval forces.*

**Question: Did the ANR 1919 bridge Service law for the Empire's Air Forces into Civilian Air law for the Empire..?**

(source ref: Canadian Government website: [Defence](#) > [Home](#) > [About](#) > [Reports and Publications](#) > [Military Law](#) > [Military Justice](#) > [Summary Trial Level 2.2](#) Chapter 2: History of Summary Proceedings)

(the following is from: CANADIAN AIR FORCE LEADERSHIP AND COMMAND - THE HUMAN DIMENSION OF EXPEDITIONARY AIR FORCE OPERATIONS)

1 January 1923 : Canadian Parliament makes Canadian Minister of National Defence responsible for:

1. Department of the Defence
  - (a) assumes responsibility for all government "Service" flying operations
  - (b) assumes responsibility for the control of "Civilian" aviation.
2. Department of the Naval Service
3. Department of the Air Board
4. Department of the Militia

1927 a technical training "scheme" (Programme) was started to supply skilled tradesmen for the Air Force.

1927 : RCAF reorganised, Directorate of Civil Government Air Operations (DCGAO) created to:

1. Administer all non-military air operations carried out by government aircraft.
2. Control all non-military air operations carried out by government aircraft.
3. Administer units, detachments and formations of the RCAF placed under its control.
4. Control units, detachments and formations of the RCAF placed under its control.

The DCGAO organizational structure:

1. "nominally" a civil organization (means "other than civilians" actually ran the organization)
2. reported to the Deputy Minister of National Defence.
3. staffed primarily by RCAF personnel
4. reorganization produced considerable shuffling of offices and appointments
5. effect on flying operations was more apparent than real.

### THE UK & CANADIAN AIR FORCE - LEGAL BASIS

The history of military law relating to the air force is brief, in keeping with the recent origins of such military forces.

During World War I, Canadian air force personnel flew with British units.

Discipline of British air units governed by the United Kingdom Air Force (Constitution) Act 1917.

## Notes on “Civil Aviation”

The Air Force (Constitution) Act, 1917, (U.K.) 7 & 8 Geo. V, c. 51 forms the Second Schedule to the Air Force (Constitution) Act, 1917.) which included the Air Force Act.

The UK Air Force Act 1917 literally replaces word for word the “Army” provisions to comply with “Air Force” terminology.

Since 1917 the military law applicable to British Air Forces has remained virtually identical to the law governing the British Army. (McDonald, “The Trail of Discipline: The Historical Roots of Canadian Military Law” at 19.)

1 April 1924 : Royal Canadian Air Force created pursuant to an Order in Council passed under the authority of the Air Board Act

1 April 1924 : Order in Council provides that *discipline would be maintained in accordance with the British Air Force Act*, except where it was inconsistent with the applicable Order in Council.

1940 : separate Royal Canadian Air Force Act enacted.

Royal Canadian Air Force Act 1940 retains the disciplinary provisions of the British Air Force Act

SMITH, J.—The following are the questions submitted:—

1. Query : Have the Parliament and Government of Canada exclusive legislative and executive authority for performing the obligations of Canada, or of any province thereof, under the Convention entitled “Convention relating to the Regulation of Aerial Navigation?”

Respondent : In my opinion, the answer to question 1 is determined by the decision in *Attorney General of British Columbia v. Attorney General of Canada*.<sup>[21]</sup> In that case, a treaty was made in 1913 between His Majesty the King and the Emperor of Japan, by which it was, among other things, agreed that the subjects of each of the High Contracting Parties should have full liberty to enter, travel and reside in the territories of the other, and in all that relates to the pursuit of their industries, callings, professions and educational studies, should be placed in all respects on the same footing as the subjects or citizens of the most favoured nation”

Respondent : Section 132 of the British North America Act is as follows:—

**132. The Parliament and Government of Canada shall have all powers necessary or proper for performing the obligations of Canada, or of any province thereof, as part of the British Empire, towards Foreign Countries arising under treaties between the Empire and such foreign countries.**

**Respondent : It follows, in my opinion, that the Dominion Parliament has paramount jurisdiction to legislate for the performance of all treaty obligations, and that, while a province may effectively legislate for that purpose in regard to any matter falling within s. 92 of the *British North America Act* while the field is unoccupied by the Dominion (but not otherwise), Dominion legislation, being paramount, will, when enacted, supersede that of the provinces about such matters.**

Respondent : The answer to the first question, therefore, substituting the word “paramount” for the word “exclusive,” is in the affirmative. I am of the opinion that, taking the words in question 2, “regulation and control of aeronautics generally within Canada,” as meaning unlimited regulations and control of aeronautics within Canada, the answer must be in the negative.

**The contention on behalf of the provinces is that the international Convention applies only to aircraft operated internationally, and has no application to aircraft of any of the contracting countries which flies wholly within the territory of the country where it is owned. ANC1919 applied nationally to the empire, ANC 1920 incorporated ICAN for allowing international operation**

Respondent : In some respects the Convention purports to deal only with international flying, but in others with the flying of all aircraft.

For example, article 25 is as follows:

*“Each contracting State undertakes to adopt measures to ensure that every aircraft flying above the limits of its territory and that every aircraft, wherever it may be, carrying its nationality mark, shall comply with the regulations contained in Annex D.”*

Annex D lays down elaborate rules as to lights and signals, and rules for air traffic, following closely the rules of water navigation.

**However the wording “Above the limits” may have been mis-interpreted by the Respondent : in this case it may have meant - based on the war terminology and root from UK English - Beyond the arm of the crown / state to control.**

## Notes on “Civil Aviation”

Respondent : If the contention of the provinces be sound, every province, so far as this Convention is concerned, would be entitled to establish rules of its own, as to lights and signals and air traffic, which might be entirely at variance with the international rules laid down in the Convention, and each of which might be at variance with the other.

**The manifest object of these rules as set out in the Convention is to secure safety in air navigation for all craft flying over the territory of the parties to the treaty;** and it is unreasonable to suppose that these rules were to apply only to aircraft flying internationally, and that every country and every province was at liberty to make its own rules for aircraft owned and flying within its own territory.

Respondent : I am of opinion, therefore, that under article 25 the Dominion is under obligation to adopt measures to ensure that every aircraft flying above the limits of Canadian territory shall comply with the regulations contained in Annex D, and has authority to enact accordingly.

Article 12 is as follows:—

*Article - 12. **The commanding officer, pilots, engineers and other members of the operating crew of every aircraft shall, in accordance with the conditions laid down in Annex E, be provided with certificates of competency and licences issued or rendered valid by the State whose nationality the aircraft possesses.***

Annex E has the following:—

*The conditions set forth in the present Annex are the minimum conditions required for the issue of certificates and licences valid for international traffic. Nevertheless, each contracting State will be entitled to issue certificates and licences, not valid for international traffic, subject to such less stringent conditions as it may deem adequate to ensure the safety of air traffic. The said certificates and licences will not, however, be valid for flight over the territory of another State.*

Article 12 in terms refers to the operating crew of *every aircraft*, while the preceding article 11, expressly refers to *every aircraft engaged in international navigation*.

*In the portion of Annex E just quoted, we (Canada) have express provision for the issue of certificates and licences by each of the states for flying within its own territory, on such less stringent conditions as each state may deem adequate to ensure the safety of air traffic. By virtue, therefore, of article 12 and Annex E, there is imposed upon each party to the Convention an express obligation to control in this way all aircraft flying exclusively within its own territory.*

**The Dominion Parliament has not, independently of treaty, jurisdiction to legislate on the subject of air navigation generally, the word “generally” being construed as equivalent to “in every respect”; and it did not, by the International “Convention relating to the Regulation of Aerial Navigation,” acquire, under section 132 of the B.N.A. Act, exclusive authority to legislate in such a way as to carry out the obligations the Convention imposes on Canada and its provinces. But the Dominion Parliament’s jurisdiction is paramount in the exercise of its authority to carry out these obligations.** Supreme Court of Canada... **where did the Respondent obtain their definition of “generally”? what was the interpretive document used to write ICAN ?**

Respondent : The Dominion may exercise legislative jurisdiction in relation to aviation in the course of executing its authority over various matters which fall within certain of the enumerated heads of s. 91 or within the subject of Immigration (s. 95); it may also exercise such authority under s. 132 where the conditions exist under which that section comes into play. **These conditions are, first, that there exists an obligation of Canada or of a province (as part of the British Empire) towards a foreign country arising under a treaty between the Empire and a foreign country, and, second, that the obligation relates to the subject of aviation or in some manner affects it.** The powers arising under that section are given for performing such obligations, and can only be validly exercised in the performance of, and for the purpose of performing, them. Legislation enacted in the valid exercise of such powers takes effect notwithstanding any conflicting law of a province; the **Dominion has full competence under s. 132 to give effect by legislation to the rules embodied in the Convention of 1919, and to take measures for the effectual enforcement of them.—Any conflicting or repugnant provincial rules would be superseded by such legislation**

Reference re legislative powers as to regulation and control of aeronautics in Canada, [1930] S.C.R. 663 Date: 1930-10-07

Respondent : “The Minister apprehends that this legislation was enacted by Parliament by reason not only of the expediency of making provision for the regulation of a service essentially important in itself as touching closely the national life and interests, but also of the necessity of making provision for performing the obligations of Canada, as part of the British Empire under the Convention relating to the regulation of Aerial Navigation which, drawn up by a Commission constituted by the Peace Conference at Paris in 1919, was, on 13th October of that year, signed by the representatives of 26 of the Allied and Associated Powers including Canada.

## Notes on "Civil Aviation"

Respondent : "This **Convention was ratified by His Majesty on behalf of the British Empire on 1st June, 1922**, and is now in force, as the Minister is informed, as between the British Empire and 17 other States.

"The Minister observes that the Air Regulations, 1920, conform in essential particulars to the provisions of the said Convention, and are designed to give effect to the stipulations thereof in discharge of **the obligations of Canada, as part of the British Empire**, towards the other contracting States.

Respondent : The subject of paragraph (a) is the licensing of personnel, which is dealt with by article 12 of the Convention. Under article 12, when read with Annex E, the obligation of each of the contracting states is **to enforce in respect to certificates and licences**, the conditions set forth in Annex E as regards international traffic, and, **as regards domestic traffic, to enforce such conditions**, not more stringent than those stated in Annex E, **as the contracting state may deem adequate to ensure the safety of air traffic**. No argument seems to be needed to show that for performing that obligation the Dominion does not require an unrestricted authority to regulate and control the licensing of personnel in all respects; which would include power to select licensees upon some principle having no relation to the safety of air traffic, or indeed, to any of the conditions laid down in Annex E.

Respondent : It is convenient to refer to regulation 33, which seems broadly to require a certificate from the Air Board to entitle anybody to act as pilot, engineer or inspector of any commercial aircraft, or of any Canadian aircraft flying outside Canada. It would be inadmissible to suppose that regulations 33 to 38 contemplate the issue, upon demand, of a certificate to any applicant; and indeed the enactment of regulations to that effect would constitute a grave departure from the requirements of Annex E. The regulations appear to leave the conditions upon which licences may be granted to the unlimited discretion of the Air Board, which conditions might be framed without any reference to article 12 or Annex E. Clearly regulations 33 to 38 on any construction of them, could not be validly sanctioned under the powers given under section 132 to legislate for the performance of the obligations mentioned.

Respondent : As I read the opinions of my three learned brothers, they all agree that "the Convention relating to the regulations of Aerial Navigation," dated the 13th of October, 1919, is "a treaty between the Empire and foreign countries," within the meaning of s. 132 of the B.N.A. Act. They are also in accord in regarding intra-provincial aviation as, prima facie, a matter of provincial legislative jurisdiction and as falling within the purview of s. 92 (13) of the B.N.A. Act; and I share those views. Sub-paragraph (b) of section 4 deals with registration, identification, inspection, certification and licensing of aircraft. Let us first consider registration. There is an implied duty to provide for registration in accordance with the provisions of section 1 (c) of Annex A of the Convention. The main purpose of registration under the provisions of the Convention is to provide facilities for identification. There is no duty, arising out of these provisions, to impose conditions other than those indicated in the Annex. There is nothing in that part of the Convention requiring legislation in the terms of section 4, or in the terms of regulations 3 and 4, the effect of which is, that aircraft may be registered only on compliance with the conditions defined by the Air Board, and that registration is a condition of the right to fly. These regulations as they stand could not be validly sanctioned under section 132. As to certification and licensing of aircraft, the Convention imposes no duty as to such certificates, except in relation to international navigation. No duty arises out of the Convention which would enable the Dominion to sanction the sweeping enactment of section 4 in relation to the certification and licensing. Regulation 12 (2) seems to require a certificate of air worthiness in respect of commercial aircraft and provincial aircraft registered in Canada. By regulation 13, such certificates may be issued upon compliance with specified conditions. In the result, such aircraft may not be registered, and consequently will not be permitted to fly, unless certified as air worthy upon conditions prescribed by the Air Board. These regulations are rather obscurely worded, but this seems to be the practical effect of them. There is no obligation, under the Convention, that is to say, no express obligation, to require such certification as a condition of domestic flying, and it is difficult to discover on what ground the condition imposed by these regulations, which affects all commercial aircraft flying in Canada, and all provincial aircraft, can be justified. The regulation as it stands would not be a valid one. Respondent : Justice DUFF J.

The Minister of Justice, in his report to Council, apprehends that this legislation was enacted by Parliament by reason not only of the expediency of making provision for the regulation of a service essentially important in itself as touching closely the national life and interests, but also of the necessity of making provision for performing the obligations of Canada, as part of the British Empire under the Convention relating to the regulation of Aerial Navigation which, drawn up by a Commission constituted by the Peace Conference at Paris in 1919, was, on 13th October of that year, signed by the representatives of 26 of the Allied and Associated Powers including Canada.

This convention was ratified by His Majesty on behalf of the British Empire on 1st June, 1922, and is now in force, as the Minister is informed, as between the British Empire and 17 other States.

## Notes on "Civil Aviation"

The Minister observes that the Air Regulations 1920, conform in essential particulars to the provisions of the said Convention, and are designed to give effect to the stipulations thereof in discharge of the obligations of Canada, as part of the British Empire, towards the other contracting States.

As already stated, the treaty was signed on behalf of the Empire on the 13th October, 1919, and ratifications deposited in Paris on June 1st, 1922.

The *Air Board Act* was assented to on the 6th of June, 1919, before the Parliament of Canada could invoke article 132 to secure the power of performing the obligations of Canada under a treaty which was not then in existence. It requires an existing treaty to give validity to legislation, not merely a prospective convention. **The Parliament and Government of Canada may have paramount, though not exclusive, legislative and executive authority for performing the obligations of Canada**, or any province thereof, under the Convention, but have not yet found it necessary or proper to exercise such legislative power.

### "As framed, question no.1 must be answered in the negative..."

whether- or not the federal government's Air Board Act was *intra vires*.

The way a question was "framed" influenced the judicial answer that question, that's what the term *framing effects* means. an unsettling aspect of *framing effects*, the fact that they can actually influence our **memories**. Each person will answer **questions** based on own perspective and information made available

This concept is used in advertising all the time, but the most fertile ground for framing effects is politics. Framing effects are powerful, they have a profound influence on people, but when we recognize that these biases exist, we can gain some measure of control. We all have to understand how fragile our brains and memories are, and that will strengthen them. If we know these biases exist, it's easier to try to avoid them. So the next time you hear a politician speaking or an advertisement telling you to buy some product, listen closely to it, and try to decipher it's real content.

#### ULTRA VIRES-INTRA VIRES

*Ultra vires* [Latin, "*beyond the powers*"] is used in **Constitutional Law** by the courts who must decide the respective competences of Parliament and provincial legislatures. If one or the other, in enacting a law, goes beyond the jurisdiction allotted to it by the constitution, the court will declare that measure *ultra vires*. If not, the court will declare it *Intra vires* [Latin, "*within the powers*"]. delegated bodies may, within their established limits, adopt regulations which, to be valid, must not exceed the limits prescribed by law. - Canadian Encyclopaedia

#### INVALID EXCESS OF AUTHORITY OR POWER EXERCISED BY AN ENTITY.

Since the powers exercised by any officer of an organization are limited by the constituting or vesting instrument (such as a memorandum of association), any act outside those limitations is *ultra vires* and may be challenged in the courts. This rule is applicable to all powers, express or implied, created by a contract or statute.

Read more: <http://www.businessdictionary.com/definition/ultra-vires.html#ixzz43cws12m4>

<https://scc-csc.lexum.com/scc-csc/scc-csc/en/item/8947/index.do>

According to a certificate from the Under-Secretary of State for Foreign Affairs, the Paris Convention of 1919 was denounced by Canada, which denunciation became effective in 1947. This was done because on February 13, 1947, Canada had deposited its Instrument of Ratification of the Convention on International Civil Aviation signed at Chicago December 8, 1944 and which Convention came into force on April 4, 1941.

With the exception of certain amendments the Aeronautics Act remains on the statute books of Canada in the same terms as those considered by the Judicial Committee in the Aeronautics case of 1932.

Section 132 of the B.N.A. Act therefore ceased to have any efficacy (the ability to produce a desired or intended result) to permit Parliament to legislate upon the subject of aeronautics - Justice Kerwin,

## Notes on "Civil Aviation"

The fact that the Paris Convention Relating to the Regulation of Aerial Navigation of 1919 was, ratified on Canada's behalf by Great Britain made it possible for the courts to award exclusive power to the federal government pursuant to section 132 of the British North America Act.

Twenty years after "the Judicial" decision of 1932, Canada had incurred obligations similar to those "found in the Paris Convention by the ratification of the 'successor instrument' - the Chicago Convention on International Civil Aviation of 1944.

That is, a substantial re-drafting of domestic legislation would have resulted had the Supreme Court held that provinces are entitled to some degree of concurrent jurisdiction of aeronautics.

Canada would also have had to submit a protocol to the Convention signifying the existence of provincial implementing legislation while remaining responsible in international law for the enforcement of the country.

Lord Sankey outlines the obligations which Canada, as part of the British Empire: "*With a view to performing her obligations as part of the British Empire* under this convention, which was then in course of preparation, *the Parliament of Canada* enacted the Air Board Act, c.II of the Statutes of Canada, 1919 (1st session), which with an amendment thereto, was consolidated in the Revised Statutes of Canada, 1927, as c. 43, under the title the Aeronautics Act. *the fulfilment of Canadian obligations under s. 132 are matters of national interest and importance; and that aerial navigation is a class of subject which has attained such dimensions as to affect the body politic of the Dominion.*

The court states that *air navigation is a matter of national importance and concern and falls within the peace, order and good government language of section 91 of the B.N.A. Act.*

# Dominion Legislation of Aviation - 1919

## “Merchant Airmen”

book AE36 - Merchant Airmen – British Civil Aviation 1939-1944

Background : Linneage :

GEORGE THE FIFTH, by the Grace of God of the United Kingdom of Great Britain and Ireland, and of the British Dominions beyond the seas KING, Defender of the Faith, Emperor of India .

IN TESTIMONY WHEREOF, *We have caused these Our Letters to be made Patent, and the Great Seal of Canada to be hereunto affixed.*

WITNESS, Our Most Dear and Entirely beloved Uncle and Most Faithful Counsellor : Field Marshal His Royal Highness PRINCE ARTHUR WILLIAM PATRICK ALBERT,

Duke of Comtaught and of Strathearn,

Earl of Sussex (in the Peerage of the United Kingdom),

Prince of the United Kingdom of Great Britain and Ireland,

Duke of Saxony,

Prince of Saxe-Coburg and Gotha ;

Knight of Our Most Noble Order of the Garter ;

Knight of Our Most Ancient and Most Noble Order of the Thistle ;

Knight of Our Most Illustrious Order of Saint Patrick ;

one of Our most Honourable Privy Council ;

Great Master of Our Most Honourable Order of the Bath ;

Knight Grand Commander of Our Most Exalted Order of the Star of India ;

Knight Grand Cross of Our Most Distinguished Order of Saint Michael and Saint George ;

Knight Grand Commander of Our Most Eminent Order of the Indian Empire ;

Knight Grand Cross of Our Royal Victorian Order ;

Our Personal Aide-de-Camp ;

Governor General and Commander-in-Chief of Our Dominion of Canada.

At Our Government House, in Our City of OTTAWA, this XXXXX day of XXXXXXX in the year of Our Lord one thousand nine hundred and XXXXXX, and in the XXth year of Our Reign .

By command,  
THOMAS MULVEY,  
Under-Secretary of State.

06 March 1915 : Ottawa : BY THE KING.

A PROCLAMATION Relating to Trading with the Enemy  
(Occupied Territory).

GEORGE R.I.

wHEREAS, as a result of the present w•tr, certain  
territory forming part of the territory of an enemy  
countr , is, or may be in the effective military occupation  
ofyUs or Our Allies, or of a Neutral State (in this

Proclamation referred to as 'tterritory in friendly occupation"), and certain territory forming part of Our territory or of that of an  
allied or neutrel State, or may be in the effective military occupation of an enemy in this Proclamation referred to as "territory in  
hostile occupation" ); AND WeERaAa it is expedipnt in Our interest and in that of Our Allies that the Proclamatione relating to  
trading with the enemy should apply to territory in friendly occupation as they aPp Iv to Our territory or that of Our Allies, and  
s(l ould apply to territory in hostile occupation as they apply to an enemy country: -

Now, THRREPORR, we have thought fit, by the advice of Our Privy Council, to issue Royal Proclamation declaring, and it is  
hereby as follows:

3 . The certificate of any person authorised by a Secretary of State to give such certificates, that any such

By THE KING.

A PROCLAMATION



## Notes on "Civil Aviation"

PROHIBITION UNDER SECTION 8 or "THE (iQBT0Y9  
AND INLAND REVENUE ACT, 1879," AND SECTION  
ONE or "THE EXPORTATION or Anus ACT190,"  
AND SECTION ONE or "THE CDTMa (ExPORTA •  
TION PROHmmon) Act, 1914," THE EXPORTATION  
from THE UNITED KINGDOM of WARLIKE stores

**In the United Kingdom, a Secretary of State is a Cabinet Minister in charge of a Government Department**

**KR&O - Regulations that lay down the policy and procedure to be observed in the command and administration : general matters concerned with a commanding officer's responsibilities : Unit Command, Control and Administration**

the framework of command and administration above the unit level

The government and command of each of the fighting Services is vested in Her Majesty The Queen, who has:

charged the Secretary of State with general responsibility for the defence of the Realm and

established a Defence Council having command and administration over Her armed forces.

statutory functions of the Secretaries of State for War and Air

The Air Force Boards are empowered by Royal Warrant to exercise certain prerogative functions.

Letters Patent

"units" are defined as "those elements having a separate Establishment". The term 'unit' may apply to"

a battalion or any equivalent lieutenant colonel's command;

to an independent smaller body, commanded by an officer of the rank of major or below (normally referred to as an 'independent sub unit');

to a depot or to a training establishment.

Any headquarters above the unit level is, for the purposes of administration, regarded as being itself a unit.

Individual units and headquarters are organized according to specific establishments which lay down authorized (personnel) strengths by ranks and trades, and numbers of vehicles, weapons and animals.

to understand Command of Units (*see* Manual of military "service" Law )

Any document referring to the "Directions" or to any provision of them shall, so, far as may be necessary for preserving its effect, be construed as referring to these Directions or, as the case may be, to the corresponding provision of them.

**The Interpretation Act of the stated year shall apply for the purpose of interpreting these Directions as it applies for the purpose of interpreting an Act of Parliament.**

## **RANK AND PRECEDENCE**

### **General Principles**

**2.031.**

- a.* Officers holding substantive rank are to take precedence over all those holding acting or local rank of the same grade. They are to take precedence among themselves according to their date of promotion to that rank.
- b.* Officers of the TA or Regular Officers on Home Service Part Time terms of service holding brevet rank are, when employed outside their regiment or corps, to take precedence with officers holding substantive rank of the same grade, according to date of promotion. When serving regimentally they are to take precedence within their regiment or corps in accordance with the date of their promotion to substantive rank.
- c.* Officers holding acting rank are to take precedence over all those holding local rank of the same grade and are to take precedence among themselves according to the date of their appointment to acting rank.
- d.* Officers holding local rank are to take precedence among themselves according to the date of their appointment to that local rank.
- e.* Precedence among warrant officers and NCOs is to follow the principles in sub-paras *a*, *c* and *d* above but is to be governed also by the precedence of corps (**see para 8.001**) and in some cases by the appointment held. This aspect is dealt with in detail in

## THE ROLE OF OFFICERS.

**The Role of Officers.** : Leadership is the principal duty of all officers; those holding Commissions, Warrants and non-commissioned officers. Commissioned officers in the British Army have a special responsibility for leadership. The Queen's Commission means that it is always the duty of a commissioned officer to take moral responsibility for the task and those subordinate in rank, whether they are in his or her direct chain of command or not. This includes setting an example both on and off duty. In the heat of battle, and in an environment sometimes dominated by high emotion and the pernicious effects of boredom and complacency, officers should have a strong enough moral compass and sufficient backbone to avoid over-familiarity and favour. They are required to prevent breakdowns in standards, ethics and the law; or simply to grip a deteriorating situation, failures in battlefield discipline, dress or bearing. The pressures or achievements of operations should not be used as an excuse to ignore or tolerate poor discipline or low professional standards. That would be a failure of moral courage and professional obligation and a breach of trust.

*"You are, in such manner and on such occasions as may be prescribed by us, to exercise and well discipline in their duties such officers, men and women as may be placed under your orders from time to time and use your best endeavours to keep them in good order and discipline...in pursuance of the Trust hereby reposed in you."*<sup>5</sup>

## 5.121 CH.5 UNIT COMMAND, CONTROL AND ADMINISTRATION PART 3 - ORDERS AND DUTIES

### Orders

#### 5.121.

- a.* Orders and instructions received by commanding officers and which are for observance by officers and soldiers under their command are to be the subject of unit orders properly signed and posted at recognized places.
- b.* Officers and, in so far as practicable and applicable, warrant officers are to acquaint themselves with regulations and orders relevant to their unit's role and its administration. They are to be afforded facilities to enable them to keep abreast of changes and amendments to these matters, and ignorance of them will not be accepted as an excuse for their non-observance.

Current 2016 letters patent to the UK MOD

## LETTERS PATENT CONSTITUTING THE DEFENCE COUNCIL (PARA J1.003 REFERS)

Elizabeth The Second by the Grace of God of the United Kingdom of Great Britain and Northern Ireland and of Our other Realms and Territories Queen Head of the Commonwealth Defender of the Faith.

To all to whom these Presents shall come Greeting.

Whereas We did by Our Letters Patent under the Great Seal of Our Realm bearing date the fourth day of May in the forty-second year of Our Reign constitute and appoint the persons therein named to be Our Defence Council to exercise on Our behalf the functions of Our Prerogative as therein mentioned

## Notes on "Civil Aviation"

And Whereas We are desirous of changing the constitution of Our said Defence Council Now therefore Know Ye that We do revoke with effect from the fifth day of November in the forty-eighth year of Our Reign Our Letters Patent bearing date the fourth day of May in the forty-second year of Our Reign aforesaid And Further Know Ye that We do constitute and appoint as from the said fifth day of November the following persons in place of those constituted and appointed by Our Letters Patent aforesaid that is to say Our Principal Secretary of State for Defence the Minister of State for the Armed Forces the Minister of State for Defence Procurement the Parliamentary Under Secretary of State for Defence the Chief of the Defence Staff the Permanent Under Secretary of State of the Ministry of Defence the Chief of the Naval Staff and First Sea Lord the Chief of the General Staff the Chief of the Air Staff the Vice Chief of the Defence Staff the Chief of Defence Procurement for the Ministry of Defence the Chief Scientific Adviser of the Ministry of Defence the Chief of Defence Logistics and the Second Permanent Under Secretary of State of the Ministry of Defence to be Our Defence Council to exercise on Our behalf the functions of Our Prerogative which have heretofore on Our behalf been exercised by Our Defence Council constituted and appointed by Our Letters Patent aforesaid and in particular to administer such matters pertaining to Our Naval Military and Air Forces as We shall through Our Principal Secretary of State for Defence direct them to execute And to have command under Us of all Officers and Ratings Soldiers and Airmen of Our Naval Military and Air Forces And Further Know Ye that Our Principal Secretary of State for Defence (or in his absence one of Our Ministers of State aforesaid) shall be Chairman of Our Defence Council so constituted and for the business of which he shall be responsible to Us and to Parliament And the said Permanent Under Secretary of State of the Ministry of Defence shall be the Secretary of Our Defence Council Provided that Our Defence Council may appoint such other person or persons to act as Secretary or Secretaries in addition to the said Permanent Under Secretary of State as Our Defence Council may think fit And We do empower and direct Our Defence Council to establish an Admiralty Board an Army Board and an Air Force Board to be charged with the administration of such matters relating to Our Naval Military and Air Forces as Our Defence Council shall direct And to have command under Us and Our Defence Council of all Officers and Ratings Soldiers and Airmen whom Our Defence Council shall place under their command And we do grant Our Defence Council authority to give and dispose of all such Offices places and employments in Our Naval Military and Air Forces as shall become or be made vacant And We enjoin all such Officers and all others whom it may concern to be obedient to Our Defence Council and to the Boards established by Our Defence Council by virtue of these Presents in all things as becometh And Further Know Ye that the powers of Our Defence Council and of the Boards so appointed may be exercised and their duties performed by any two of their members and any document may be signed on behalf of Our Defence Council or of any of the said Boards by any two of their members or by the Secretary or person acting as Secretary of Our Defence Council or of that Board And We Do further direct that the arrangements for the administration and government of Our Naval Military and Air Forces described in these Our Letters shall come into effect on the said fifth day of November in the forty-eighth year of Our Reign In Witness whereof We have caused these Our Letters to be made Patent Witness Ourself at Westminster the fifth day of November in the forty-eighth year of Our Reign.

By Warrant under The Queen's Sign Manual

### CONTROL OF AERONAUTICS - THE AIR BOARD ACT

The Air Board Act (Chapter 11)

provides for the appointment by the Governor in Council of an Air Board consisting of from five to seven members to include a Minister of the Crown as chairman and representatives of the Departments of Militia and Naval Service. The Board is given powers of control over aerodromes, air stations, air craft, etc., and generally over aerial navigation in Canada and its territorial waters.

The Canadian Air Board consisted of:

the Rt. Hon. A. L. Sifton, P.C., K.C., Chairman ;

Mr. O. M. Biggar, K.C., Vice-Chairman ;

the Hon. S. C. Mewburn, C.M.G. ;

the Hon. C. C. Ballantyne;

## Notes on "Civil Aviation"

Dr. R. M. Coulter;

Mr. J. A. Wilson;

Mr. E. S. Busby ;

The heads of branches are:

Lieut.-Col. R. Leckie, D.S.O., D.S.C., D.F.C., Superintendent of Flying Operations ;

Lieut.-Col. J. S. Scott, M.C., A.F.C., Superintendent of Certificates Branch ;

Major A. M. Shook, D.S.O., D.F.C., A.F.C., Secretary.

General.—The Air Board Act was assented to on June 6, 1919, and by Order in Council dated June 23 (P.C. 1295),

the Hon. A. L. Sifton was named as Chairman of the Board,

Col. O. M. Biggar, Judge Advocate-General, as Vice-“ Chairman ;

the Hon. S. C. Mewburn, Minister of Militia and Defence, as the representative on the Board of the Department of Militia and Defence ;

the Hon. C. C. Ballantyne, Minister of the Naval Service, as the representative on the Board of the Department of the Naval Service,

and Dr. R. M. Coulter, C.M.G., Deputy Postmaster-General,

Mr. J. A. Wilson, Assistant Deputy Minister, Department of the Naval Service, and

Mr. E. S. Busby, Chief Inspector of the Department of Customs and Inland Revenue.

The Board was called together immediately, and considered the organisation of a staff. After consultation with the Civil Service Commission, it was decided that the work under the Board should be divided into three branches, having at their heads respectively a Superintendent of Flying Operations, a Superintendent, Certificate Branch, and a Secretary, the proposal being that the Secretary should administer the internal office organisation, that the Superintendent of Flying Operations should control all civil government flying, and that the Superintendent of the Certificate Branch should conduct that portion of the administration which related to the public and was concerned with the licensing of personnel, aircraft and air harbours. The organisation thus outlined was formally communicated to the Civil Service Commission on July 15, with a request that provision should at once be made for the appointment of these three officers and a medical officer for the Certificate Branch.

No appointments were, however, made until after some time, and the first appointees assumed their duties as follows

November 3, Lieut.- Col. J. Stanley Scott, M.C., A.F.C., Superintendent, Certificate Branch ;

November 10, Major A. M. Shook, D.F.O., D.F.C., A.F.C., Croix de Guerre, Secretary, and

November 10 Capt. F. R. Smith, Medical Officer ;

December 15, Lieut.- Col. Robert Leckie, D.S.O., D.S.C., D.F.C., Superintendent of Flying Operations.

Permanent office accommodation was made available for the Board's staff only on December 24.

## 2. Air Regulations

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The only step which, before the appointment of technical officers, it was possible to take in the direction of regulating and controlling aerial navigation was to prohibit dangerous flying. An Order in Council for this purpose was passed on July 7 (P.C. 1379).

The drafting of a complete set of regulations was, however, proceeded with, and was completed in time for their submission to and approval by the Governor in Council on December 31. The Canada Gazette containing the regulations was published on January 17, 1920, and at the same time there was ready for distribution a book containing not only the regulations, but also the forms settled for use under them, the Air Board Act and the Convention relating to International Air Navigation as drafted by a sub-commission constituted as part of the organisation of the Peace Conference and approved by the Supreme Council. This book has already had a wide distribution.

## 2 Preliminary Surveys for Operations

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In November steps were taken to have made a preliminary survey with a view to ascertaining what public services could more efficiently, and in the broadest sense more economically, be performed by air than by existing methods. Canada was, for this purpose, divided into four parts, and ex-Royal Air Force officers borrowed or temporarily employed for the purpose.

The survey was completed by the end of the year, and on January 2 these officers were assembled at Ottawa and the situation was thoroughly canvassed, with the result that it was decided that the most favourable fields for the commencement of operations were

## Notes on "Civil Aviation"

the less thickly settled and less thoroughly explored portions of Canada. An interdepartmental conference was accordingly held on January 10 1920.

An agenda for this conference, including memoranda on the probable cost of operating aircraft and on their use for purposes of survey and for fire protection, was distributed, and a number of places were named as possible air stations, upon the utility of each of which discussion was invited.

The usefulness of this preliminary conference was reduced by the non-participation of some of the departments which it was expected would be interested, but special discussions have since been carried on with those departments which were represented and some others. Proposals have been formulated for operations next summer.

### 4. Scientific Research

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Among the duties imposed upon the Board is that of **undertaking technical research for the development of aeronautics** and of co-operating for that purpose with other institutions.

In execution of this duty, discussions took place with the Honorary Advisory Council for Scientific and Industrial Research, which resulted in the formation under that Council of an Associate Air Research Committee, which held its first meeting on February 7 1920.

07 February 1920 NRC - Associate Air Research Committee :

Chairman of the Committee : Prof. A. S. Eve, Professor of Physics : McGill University

Secretary : Mr. R. J. Durley, Secretary of the Engineering Standards Association

Member : Prof. J.C. McLennan, Professor of Physics : University of Toronto,

Member : Mr. J. R. Parkin, lecturer, faculty of applied science : University of Toronto

This Committee will work in the closest co-operation with the officers of the Air Board, and will co-ordinate aeronautic research throughout Canada.

### 5. Meteorological Development

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The importance of meteorological information to air navigation cannot be overestimated, and arrangements have been completed with Sir Frederick Stupart looking towards the necessary developments of the meteorological reports, the undertaking of meteorological observations at air stations operated under the Air Board, and the distribution of meteorological information.

### 6. Wireless Installations and Navigators' Certificates

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The development of air navigation will involve a considerable extension of wireless communication, and arrangements have been made with the General Superintendent, Government Radio Telegraph Service in the Department of Naval Service, for this purpose. Air pilots who require wireless qualifications will obtain them through that department, by which will be issued licences for the necessary installations both in aircraft and on the ground. That department has an organisation extending throughout Canada, and duplication of officers is thus avoided. **Like arrangements are expected to be made with the Department of Marine and Fisheries for the issue of navigators' certificates to air pilots who desire or need them. The existing organisation under that department extends throughout Canada, and undertakes the examination and qualification of marine navigators.** As the problems met with in air navigation are very similar to those which present themselves in marine navigation this arrangement is expected to be both economical and satisfactory.

### 7. Aircraft and Equipment

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Negotiations have been entered into looking towards the taking over by the Air Board of the seaplane stations erected during the War by the Department of the Naval Service at Halifax and Sydney, and that portion of Camp Borden which was developed as an

## Notes on "Civil Aviation"

aerodrome by the Royal Air Force and acquired by the Department of Militia and Defence after the conclusion of the War. The equipment, which will come under the control of the Air Board from these sources, has an estimated value of \$170,000. In addition to the aircraft and equipment thus acquired, 16 machines of an approximate value of \$100,000 are being received from the Air Ministry by way of replacement of those presented from time to time during the War to the Canadian forces through the activities of the Overseas Club, and the Imperial Government is also presenting to Canada aircraft and equipment of the value of about \$5,000,000, **including 80 aeroplanes, 14 flying boats**, 12 airships, 6 kite balloons with inflating plants and sheds, 300 motor and other vehicles and a substantial amount of armament, wireless instruments, cameras and other technical **and general stores**. A considerable part of this gift has already been shipped, and shipment of the remainder will not be long delayed.



### 8. Mapping

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At the request of the Air Board, the Dominion Geographer has commenced the preparation of aeronautical maps on the system laid down in the Convention relating to International Air Navigation. Flight , page 574, May 27, 1920.

The process of completing the mapping of Canada on this system will necessarily be a very long one.

### 9. Canada's "Air Force"

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The question of the constitution of a Canadian Air Force was an early subject of consideration by the Air Board, and on December 22 there was adopted for submission to Privy Council, a memorandum covering the general lines of the organisation proposed. A final decision on this subject was, however, postponed until the general policy which regard to Canada's future sea, land and air forces was determined, and it has consequently not been possible to take any further steps in this direction. The very large number of ex-officers and airmen of the Royal Air Force in Canada are expected enthusiastically to support the proposals if it is found possible to adopt them.

### 10. Aeronautic Intelligence

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The Air Board Act imposes upon the Board a duty " to study the development of aeronautics in Canada and other countries." In the execution of this duty the Air Board has had the advantage of the work done before its constitution by the Intelligence Branch of the Canadian Air Force under the Ministry of Overseas Military Forces of Canada.

This branch, during the two years of its existence in London, had collected material of very great interest and value, and its papers were, in the course of demobilisation of the Canadian Expeditionary Force, transferred to the Air Board, which also secured the services of one of the officers chiefly responsible to its administration.

## Notes on "Civil Aviation"

The Air Board, consequently, has available fairly complete sets of drawings of almost all standard British machines, engines and equipment, with specifications for the construction of many of them, and has also an adequate collection of technical publications, reports and documents.

The Intelligence Branch of the Canadian Air Force, O.M.F.C., established communication with the chief aircraft manufacturing companies, and this communication has been maintained, with the result that the Air Board secures early information of developments in design and of inventions having an importance from an aeronautical point of view.

With this material it is able to deal with the problems which present themselves to commercial and other companies, and which require solution in connection with operations undertaken on behalf of the Government.

The theory of 'continuing' sovereignty, as explained by Professor Dicey, is that there are no limits to the legislative competence of Parliament. Each Parliament is absolutely sovereign in its own time and may legislate as it wishes on any topic and for any place. That which has been enacted by Parliament has supreme force and cannot be invalidated or changed by any other domestic or external authority. As so outlined, the doctrine has been the very foundation of the British constitution since at least the latter days of the nineteenth century.

As a general rule, if an Act is partially or wholly inconsistent with a previous Act, then the previous Act is repealed to the extent of the inconsistency. It does not matter that the later Act contains no express words to affect the repeal or alteration. This is known as the doctrine of implied repeal.

Treaty-making powers rest in the Crown, acting on the advice of its Ministers and their actions can not be challenged or questioned in the courts.

No Parliament could bind its successor, so the Treaty of Rome (which once signed was irrevocable), could be reversed by a subsequent Parliament.

Lord Salmon said of Parliament's legislative powers that

"...it can enact, amend and repeal any legislation it pleases." - Blackburn v Attorney-General (1971) CA

A statute could not be challenged on the grounds that it was illegal, or made for an unlawful purpose, for if this were possible the supremacy of Parliament would be denied.

While there was a general presumption that Parliament would not wish to override the UK's international obligations it certainly had the power to do so, where an Act conflicts with a Convention the Act prevails. - Cheney v Conn [Inspector of Taxes] [1968] Chancery Division

Legislation passed using the Parliament Acts is not subordinate legislation but primary legislation. - Jackson v Attorney General [2005] HL

"Are we to act as regents over what is done in Parliament with the consent of the Queen, Lords and commons? I deny that any such authority exists. If an Act of Parliament has been obtained improperly, it is for the legislature to correct it by repealing it: but, so long as it exists as law, the courts are bound to obey it." - just. Willes J, Lee v Bude & Torrington Junction Rly Co (1871)

A reference to the ECJ would not be ordered since it was a matter for the national court whether such discrimination was justified. - Parliamentary sovereignty - effect of EC law - a national of an EEC Member State, Macmahon v Department of Education and Science [1982] CD

Parliamentary debates could be used in interpreting delegated legislation. UK legislation should be interpreted in accordance with EC Law. There is a presumption that Parliament will not pass legislation that would conflict with the UK's international obligations. - Pickstone v Freemans PLC [1988] HL

## Notes on “Civil Aviation”

*The majority of commercial aviation firms operating in Western Canada do not keep their log books up to date, and in many instances have no information whatsoever about repairs or replacements to aeroplane and engine during the previous flying season. The practice of keeping flying time in rough note books and on separate pieces of paper is mainly responsible for this neglect. Such note books and bits of paper usually appear to be of no importance if left scattered about and are, therefore, lost, or if kept in a safe place, the accumulation is so great at the end of the flying season that it is a very weary task to copy the whole into the log books and usually it is left undone. If log books were carried in the machine and entered up after each day's flying it would only be a five minute task, and the information about repairs and replacements would be accurately remembered and put down. In case the machine was being left out overnight the logbooks could easily be carried to his room by the pilot, instead of being left out to perhaps get rained on, or taken away as souvenirs by some prowler in the night. The importance of having available for inspection, a detailed history of the aeroplane and engine, both in regard to flying time and repairs, is absolutely necessary - for at the present time commercial aviation personnel seem very reluctant to give the Examiner any information which could be of assistance to him in carrying out his inspection - N.R.*  
Anderson, Canadian Air Board - Air License Inspector to L.S. Breadner, 21 June, 1922, found in Anderson's RCAF documents, National Personnel Records Centre, National Archives of Canada

### HISTORY, A DEFINITION WITH THREE DISTINCT MEANINGS.

History, according to one definition, is a word with three distinct meanings <sup>4</sup>.

History:

1. refers to actual events that took place
2. the memory of those events
3. the attempt to understand and interpret the surviving evidence.

The third kind of history is always written from the perspective of the present – even when the historian makes a conscious effort to avoid imposing contemporary values on the past.

### I Read, I Think : Therefore...

I read — Record “relevant information” about: \_\_\_\_\_ the subject or area of discussion.

I think — Record what “you know” about: \_\_\_\_\_ and what you “think” it means.

Therefore — Record your conclusions: \_\_\_\_\_ based on the evidence presented here and any prior knowledge you may have.

## Ground Engineers UK / AIR Engineers Canada

### Ground Engineer Training materials

E587 Aero Engineering Vol I Part I – Principles & Construction (H Nelson; George Newnes) 1930s hb £10.00  
E586 Aero Engineering Vol I Part 2 – Principles & Construction (H Nelson; George Newnes) 1930s hb £10.00  
E585 Aero Engineering Vol II Part 1 – Production (Ed H Nelson; George Newnes) 1930s hb £10.00  
E588 Aero Engineering Vol II Part 2 – Production (Ed H Nelson; George Newnes) 1930s hb £10.00  
E589 Aero Engineering Vol III Part 1 – Maintenance & Overhaul (Ed H Nelson; George Newnes) 1930s hb £10.00  
E590 Aero Engineering Vol III Part 2 – Maintenance & Overhaul (Ed H Nelson; George Newnes) 1930s hb £10.00  
E584 Aero Engineering – Charts – containing 50 Data Sheets on aircraft in the 30s £12.00  
AA84 The Aero Engineers Manual (PH Simpson; British Aviation Publications 3<sup>rd</sup> edn 1943) hd 176 pgs £3.00  
AK47 Aero-Engine Practice [Aeroplane Maintenance & Operation Srs Vol 21](Ed E Molloy; George Newnes 1930s) hb 132 pgs £8.00  
AA29 Aero Engines for Students (RA Beaumont; George Allen & Unwin 1943) hb 168 pgs £4.00  
G136 Aeronautical Engineering – A Practical Guide (RA Beaumont; Odhams Press late 30s) hb 511 pgs £5.00  
AK49 Airscrews (Part 2) 2<sup>nd</sup> edn (Ed E Molloy; George Newnes 1942) hb 106 pgs £8.00  
AL07 Airworthiness of Civil Aircraft Registered in the UK (ARB Handbook No.1 – 1960) sb 50 pgs £5.00  
E343 Boost Control for Aero Engines (EW Knott; George Newnes 36 pgs) £3.00  
AL06 Civil Aircraft Inspection Procedures – Air Registration Board – massive loose leaf book in official binders (5” thick) with updates to 1965 £15.00  
F027 A Complete Course for Ground Engineers A, B, C, D & X Licences (WJC Speller; Sir Isaac Pitman 1935) hb c500 pgs £15.00  
AL04 The Flight Testing of Production Aircraft (JA Crosby Warren; Pitman 1943) hb/dw 132 pgs

<sup>4</sup> <https://legionmagazine.com/en/1996/10/the-role-of-jill-canuck/#sthash.PHJyloKJ.dpuf>



## Notes on "Civil Aviation"

AA85 The Ground Engineer's Manual (AC Robinson; George Newnes 1939) hb/dw 132 pgs  
 E352 Inspection of Aircraft after Overhaul (SJ Norton; Pitman 4th ed 1942) hb/dw 116 pgs  
 AA27 Aero-Engines – Inspection – "D" Licence (AN Barrett; 6th edn 1940) hb136 pgs £4.00  
 E867 Electrical & Wirelless Equipment of Aircraft (SG Wybrow; 4th edn; 1941) hb 181 pgs £4.00  
 E351 The Rigging Maintenance & Inspection of Aircraft – "A" Licence (WJC Speller; 2nd edn 1941) Hb 143 pgs £4.00  
 Air Dates – Chronological Survey Military/Civil aviation from 1783 to 1956 (Air Cdre LGS Payne; Heinemann 1957) – Comprehensive day by day directory hb/dw 564 pgs

Ground Engineers were internationally recognised<sup>5</sup> and known to have been involved in UK Civilian aviation from well before the start of WW1. They were formally named and identified at the end of WW1 and ascribed unique duties and responsibility in the civilian world as well as within the British military service.

"The problem of aeronautics is no longer flight. It is education!" - Glenn Curtiss

AIRWORK ENGINE SERVICE LIMITED  
 HESTON AIRPORT - HESTON, MIDDLESEX.

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CYLINDER INSPECTION REPORT MADE BY

CUSTOMER'S NAME. <i>Messrs. Airco. Limited</i>				JOB NO. <i>1234</i>	
MAKE. <i>De Havilland</i>	TYPE. <i>Empire</i>	MODEL NUMBER. <i>114</i>	USER. <i>Nil</i>	REMARKS. <i>Good condition</i>	

DIFFERENCE IN in 100ths of an inch FROM NOMINAL OR MEASURED DIAMETER.

X Represents dimension across the T-RUSS AXIS Y = is the dimension across the GLIDERS PLG axis of the cylinder.

THE TOP READING IS TAKEN AT THE END OF ONE TOP RING TRAVEL IN WORN CYLINDERS.

No. of CYLINDER.	1	2	3	4	5	6	7	8	9
TOP	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>					
	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>					
CENTER	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>					
	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>					
MOUTH	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>					
	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>					

REMARKS.  
*Wells in good condition - No score.*

DATE. *1/1/1943.* ISSUED BY. *[Signature]*

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<sup>5</sup> The United States National Advisory Council on Aeronautics - Bibliography of Aeronautics, 1920-1921 - PAUL BROCKETT Smithsonian Institution pages 13, 182 & 311

"This work covers the literature published from January 1, 1920, to December 31, 1921, and continues the work of the Smithsonian Institution issued as Volume 55 of the Smithsonian Miscellaneous Collections, which covered the material published prior to June 30, 1909, and the work of the National Advisory Committee for Aeronautics as published in the Bibliography of Aeronautics for the years 1909 to 1916 and 1917 to 1919.

As in the Smithsonian volume and in the Bibliography of Aeronautics for **the years 1909 to 1916 and 1917 to 1919, citations of the publications of all nations have been included in the languages in which these publications originally appeared.**

The arrangement **is in dictionary form with author and subject entry and one alphabetical arrangement.**

**Detail in the matter of subject reference has been omitted on account of the cost of presentation, but an attempt has been made to give sufficient cross reference for research in special lines.**

Joseph S. Ames, Chairman Executive Committee, National Advisory Committee for Aeronautics **09 December 1924**

# Canadian Aviation Time line

When viewed against the origins of similar activities, the history of Canadian law relating to the “Civilian aviation” is relatively recent. However it does not come without a prior foundation.

That foundation is directly tied to the history of the Laws of the British Empire and Canadian military law relating to the Canadian air force and subsequently, the origin of the British Empire’s military Air force.

Military aeronautics did not exist in Canada prior to World War I.

During World War I, Canadian air force personnel flew with British units. Discipline of British air units was governed by the United Kingdom Air Force (Constitution) Act 1917. The head of the British Empire - the United Kingdom had, in 1911, enacted an Aeronautics Act, amended in 1913, and then re-issued in April 1919 following the armistice that ended WW1.

The British flying services of the First World War never gave official status to the term ‘ace’ and one will never find an authorized list itemizing their scores. This practice recognized the injustice of singling out one category of combatant over another. - See more at: <https://legionmagazine.com/en/2015/09/air-force-the-fighter-pilot-who-hated-killing/#sthash.BbYh8sI3.dpuf>

World War I British pilots were usually commissioned officers. Non-commissioned officer pilots were a rarity until 1918, and were still greatly outnumbered by officers. And so by late 1919, the pilot’s trade had reverted to being an officer’s preserve. - See more at: <https://legionmagazine.com/en/2005/09/the-nco-pilots/#sthash.kpQ7EauU.dpuf>.

The world went to War in 1914 with primitive aircraft, they evolved rapidly and each year brought substantial changes in design and construction. Post WW1 the vast surplus went on the auction block - effectively becoming “Civilian” aircraft..

## BRITISH IMPERIAL AVIATION - 1803

1803 : Major John Money, urges the British Army to adopt Balloons, <sup>6</sup> his suggestion is not taken up by the military leadership of the day.

## BRITISH IMPERIAL AVIATION - 1806

1806 : The 10th Earl of Dundonald - Lieutenant **Thomas Cochrane**, R.N tows kites from the brigantine PALLAS off the French coast in order to release propaganda pamphlets.

## BRITISH IMPERIAL AVIATION - 1809

1809 : Captain Thomas Cooper's "Instructions for Officers" includes a section on the use of Balloons.

## BRITISH IMPERIAL AVIATION - 1819

1819 : Charles Rogier produces a document discussing *the merits of Aerial Bombing*. <sup>7</sup>

## BRITISH IMPERIAL AVIATION - 1846

1846 : Military Board formed to determine the feasibility of Samuel A. Warner's "Bombing Balloon". 2 Officers appointed to the board declare it Impractical.

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<sup>6</sup> John Money, "A Short Treatise on the Use of Balloons and Field Observatuers in Military Operations" London, 1803

<sup>7</sup> Charles Rogier, 'A word for my King and Country : A treatise on the utility o Rocket Armament, assisted by Balloons" London, 1819

## Notes on "Civil Aviation"

### BRITISH IMPERIAL AVIATION - 1853

1853 : Henry Coxwell fails to convince the Government of the need for Balloons for military purposes.

### BRITISH IMPERIAL AVIATION - 1854

1854 : Crimean War. Colonel Lefoy recommends building a balloon at the School of Military Engineering for experimenting and tests. The military convene a Board of 9 Officers to consider the plan. They decide against its' implementation. Of the numerous suggestions submitted on the assorted duties of the Royal Engineers to the War Ministry during the Crimean campaign, one was *"to bomb Cronstadt from the air by means of an explosive laden balloon"* <sup>8</sup>

### BRITISH IMPERIAL AVIATION - 1855

1855 : Seige of Sevastopol : British Secretary of State for War writes to his Marshal in the Field, Lord Raglan, that *"a means for ascertaining the inner defenses and obstacles which may be encountered, could be determined by reconnaissance from a Balloon."*

### BRITISH IMPERIAL AVIATION - 1861

1861 : F. Miller, R.E undertakes a tactical study of the 1859 war and the French and Italian Army's use of balloons. The account is read before the members of the Royal Artillery Institution. <sup>9</sup>

### BRITISH IMPERIAL AVIATION - 1862

1862 : Lieutenant G.E Grover, R.E <sup>10</sup> : While at the Woolwich Arsenal, he experiments with the production of Hydrogen.

1862 : Captain F. E. Beaumont, R.E <sup>11</sup> attaches himself to the Federalist Army in the war between the Northern and Southern States personally observes the Operations of the Federal Balloon Corps in America. Beaumont helps to convince the War Office of the importance of, and need for, Balloons - if only on an experimental basis.

### BRITISH IMPERIAL AVIATION - 1863

1863 : Guillaume Joseph Gabriel de La Landelle fathers the term (noun of action) *"aviation"* by combining the Latin word for Bird *"avis"* with the suffix *"-ation"*. <sup>12</sup>

### BRITISH IMPERIAL AVIATION - 1866

1866 : F. H. Wenham enunciates the important principle that *the supporting force on an inclined surface being driven through the air is limited to a narrow area near the front edge* in a paper on "Aerial Locomotion." read at the first meeting of the Aeronautical Society of Great Britain

This fact, of course, suggested a large "aspect ratio." He also points out the desirability of superposing the supporting surfaces to obtain great lifting power.

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<sup>8</sup> Lt. G.E. Grover, R.E. "The uses of Balloons in Military operations", 1863

<sup>9</sup> F. Miller "A Study of the Italian Campaign of 1859", Minutes of proceedings of the Royal Artillery Institution, Woolwich, 1863

<sup>10</sup> Brigadier P.W.L Broke-Smith "The History of Early British Aeronautics" - The Royal Engineers' Journal, W&J Mackay Ltd. Chatham

<sup>11</sup> Brigadier P.W.L Broke-Smith "The History of Early British Aeronautics" - The Royal Engineers' Journal, W&J Mackay Ltd. Chatham

<sup>12</sup> Guillaume Joseph Gabriel de La Landelle "Aviation ou Navigation aérienne sans ballons", Paris 1863

**CANADIAN AVIATION - 1867**

1867 : Canadian "Common" Law

The federal government is granted sole jurisdiction over the "Militia, Military and Naval Service, and Defence" pursuant to section 91(7) of the Constitution Act 1867.<sup>3</sup>

In exercise of this jurisdiction, Parliament has enacted the National Defence Act, which is the governing statute of Canada's Military Forces.

The Second Division of that statute contains the Code of Service Discipline.

The Code of Service Discipline is a complete code of military law applicable to persons under Canadian Military service jurisdiction.

Also, under section 12 of the National Defence Act, the Governor-in-Council and the Minister of National Defence are empowered to make regulations for the organization, training, discipline, efficiency, administration, and government of the Forces, so long as such regulations are not inconsistent with the National Defence Act.

Under this authority, the government has promulgated the Queen's Regulations and Orders (QR & O).

The QR & O amplify the Code of Service Discipline and serve as the authoritative manual for military law in Canada.

The jurisdiction of the civil courts is not affected by the Code of Service Discipline, and persons subject to the Code may be triable in both military and civil jurisdictions.

In general, the law of Canada, which applies to all citizens, also applies to members of the Forces.

Therefore, the person who joins the service is still within the jurisdiction of the civil courts and, as a member of the Forces, is also within the jurisdiction of the military courts. In determining original jurisdiction, one must look at the three types of offences that apply to service personnel: first, those offences that are triable only by the civil courts; second, those that are triable only by a military tribunal; and third, those that are within the jurisdiction of both military and civil courts. In the first type of offence, when charged with murder, manslaughter, or sexual assault, the service person must be tried by the civil court, and cannot be tried under military law. The second type of offence involves those matters that are purely of a military nature. These include absence without leave, desertion, disobedience of a lawful command, mutiny, insubordination, and so on. The third type of offence involves matters of the civil law that are brought into the Code of Service Discipline under section 120 of the National Defence Act,<sup>9</sup> or certain offences under the Code of Service Discipline that may be triable in the civil courts with the consent of the Commanding Officer of the complainant.<sup>10</sup> Under section 120 of the National Defence Act, a member of the Canadian Forces may be tried under military law for any offence under the Criminal Code or any other act of the Parliament of Canada. Also, offences that are triable in civil courts, with the consent of the complainant's Commanding Officer, may be triable by military tribunal under section 120. In the case of offences brought under the Code of Service Discipline through section 120, the civil courts maintain jurisdiction whether or not the accused person is tried by a military tribunal. Section 61(1) of the National Defence Act states that "Nothing in the Code of Service Discipline affects the jurisdiction of any civil court to try a person for any offence triable by that court." Therefore, a member of the forces can be brought before a civil court and tried for a matter that has already been disposed of by the military under section 120 of the National Defence Act. The Act requires that the civil court shall, in awarding punishment, take into account any punishment that was imposed by the service tribunal.<sup>11</sup> Additionally, when the punishment of the military court was a sentence of imprisonment, upon conviction or acquittal by the civil court the military sentence is remitted.<sup>12</sup> However, these provisions do not eliminate the problem of double jeopardy and it would appear, at first glance, that section 61 of the National Defence Act violates section 10(h) of the Charter, which provides that: Any person charged with an offence has the right ... if finally acquitted of the offence, not to be tried for it again and, if finally found guilty and punished for the offence, not to be tried or punished for it again.

**CANADIAN AVIATION - 1878**

1878 : In the first half of the Nineteenth Century, there was little controversy over what was taught as most young people did not attend school and those that did were either attending very expensive private (public) schools or learning the 3 R's until the age of 11. If you went to the former, you were more likely to study Greek or Roman history than you were any British or Imperial history. But of course, the Greek and Roman historical experiences were often used as a substitute and learning aid for the leaders of what would become the British Empire. Parallels were often drawn between the experiences of Roman Consuls and Emperors and those of British politicians and Civil Servants. Greek and Roman theories of government were the only form of political discourse entertained for younger minds.

The British Empire was regarded as being the heirs to this classical tradition. However, it was hoped that by studying the two classical civilisations, the British might learn from their mistakes and keep their own Empire flowering and make it an even more

## Notes on "Civil Aviation"

successful empire than the Greeks and Romans had managed. It was no accident that British colonial architecture and art was far more likely to be influenced by these Mediterranean Civilisations than from any local or indigenous cultures that the British came in to contact with. The British Empire was evidence of a Classical Renaissance to Britain's ruling elite.

Those who were not fortunate enough to receive a private education would probably not receive any meaningful education at all. There were some private local village schools that could provide a basic education for a modest fee. Churches could provide subsidised education as they were keen to ensure that the population could access the Bible and understand Christian ideals. However, even these schools often asked for contributions from parents. Both of these kind of schools were only interested in teaching the basic 3 R's and often had multiple ages within a single classroom.

Another possibility was to gain a scholarship to a local private (public) school. In fact, this is the reason for the confusion of the names in the British educational system. These private schools were supposed to make places available to the public through scholarships based on merit - hence the name 'public' school. However, the vast majority of students were always fee-paying and most were full time boarders. The schools were often in imposing buildings away from large towns and cities.

Another option was the Grammar schools. These were also fee paying, but could be attended by non-boarders. There would still be a fee, but it was nowhere near as high as the private (public) school fees. These were for post 11 age ranges and did provide a broader curriculum often teaching more advanced maths, literature, science and humanities. They were still more likely to study Greek and Latin than French or German as they aped the educational standards of the private (public) schools.

These schools appealed more upwardly mobile families. It is in this category that the kernel of a meaningful history curriculum can be found. These sons, and occasionally daughters, were expected to fulfil the managerial and functionary jobs of empire. They might become NCOs or junior officers of less famous or popular army regiments or in the Royal Navy. They might have gone on to run the train stations, stores, post offices, telegraph stations, etc... These would become the middle class over time but it would be a painful and time consuming process. But it is in these grammar schools that the idea of teaching a national story came to have some prominence. The national story was a very simplistic and basic one. It would largely involve Kings and Queens, important battles and a positive spin on Britain's achievements to date. It was meant in no way to challenge the ruling classes and system in place, rather it was designed to support the system and explain why the country was the country that it was. Chronologically, this simplistic and non-controversial history would start to push further and further from the Tudors to the Stuarts to the Glorious Revolution and then into the era of Empire.

Generals and Admirals like Drake, Wolfe, Nelson and Clive were emphasised as heroes of the ongoing national story. The Revolution in the 13 colonies was portrayed as an aberration due to a dangerous slide to tyranny (a la the Roman Empire) by George III and his Prime Ministers. The Napoleonic triumph was used to contrast this slide to tyranny and demonstrate that Britain thrives when it pursues ideas of liberty and freedom. It was all very simplistic but also very compelling and easy to sell. It is no accident that the popular presses of the late 19th and early 20th century thrived on stories of imperial adventure and endeavour. This popular press became the spokesmen for imperial intervention as most of the 'educated classes' would have been taught little else to oppose those ideas.

"Blue Coat" Schools - Charity schools set up by the churches to provide education for those who might not be able to afford it. The "blue coat" refers to the uniform that was supplied to the students attending. It was expected that most of the students "Blue Coat" Schools would learn a trade, but some could and did go on to University.

Schoolmasters were expected to teach a range of ages and abilities - although usually for payment of some kind. This meant that it tended to be the children of the more well to do who would be educated. Although the very wealthy might have governors or governesses dedicated to their children's education.

Village Schools - Very often, the older students were employed to teach the younger ones. All ages would be taught by the same teacher in the same room up until the age of 11 in most cases.

1878 : Canada : James Loudon, educator, physicist (b at Toronto 24 May 1841; d there 29 Dec 1916). President of the University of Toronto from 1892 to 1906, Loudon devoted his life to the university. Gold medalist in **MATHEMATICS** in 1862, he became tutor in mathematics at University College in 1863 and the first Canadian professor of the university in 1875, succeeding his teacher John Bradford Cherriman. In 1873 he was elected to the university senate. In 1878, at Loudon's recommendations, the School of Technology (renamed the School of Practical Science) was affiliated with the university.

## Notes on “Civil Aviation”

The Ontario School of Practical Science was established in 1873 by order of Provincial Parliament, and began a full program of study in 1878. The School had a general mission to promote and enhance the industrial and economic capacity of the still new Province of Ontario and, in a larger sense, the Dominion of Canada as a whole. The University of Toronto already existed at this time as an arm's-length, self-funded institution of higher learning under the auspices of the Province. It was, however, still primarily focused on traditional modes of intellectual pursuit and had not developed an interest in applied knowledge for the new industrial economy. Lacking an established Chair in the civil engineering discipline, the course in Civil Engineering consisted primarily of theoretical, academic sciences. Because of this, and the desire to ensure that the new school could focus specifically on practical applications of the sciences, the School of Practical Science was established as a separate, but complimentary, entity to the University of Toronto. The legislative paperwork was signed into law in January 1871 by the government of Sandfield MacDonald. In 1873 the Government of Oliver Mowat, following Blake's lead, took the legislative steps to create a full school for “mining, engineering, mechanics and manufactures” that would be fully controlled by the Provincial Government but which would have, from its outset, a strong link to University College at the University of Toronto. Thus, what would become the Department of Civil Engineering at the University of Toronto had been founded as the Ontario School of Practical Science. The Ontario School of Practical Science was built in 1877-1878 in full conjunction with the University of Toronto as the Applied Science Department of University College. Following some politically intriguing debate, John Galbraith, BA., MA., University College, was hired to be the first Professor of Engineering and would become the School's champion for years to come. Galbraith had come highly recommended by his peers and professional associates, having built himself a successful engineering practice with ties to the railways, mechanics, and other public projects. He formally took office on September 28, 1878, just in time to begin teaching that year.



The School of Practical Science offered a three-year practical diploma program in three areas: Engineering (meaning Civil, Mechanical, and Mining Engineering), Assaying and Mining Geology, and Analytical and Applied Chemistry. The School also offered a one-year certificate program in Surveying. In its first year, the School saw 8 full-time regular engineering students; this grew to 12 by the following year. Enrollment rose steadily despite tuition fees of \$80 per year, including books and laboratory fees. In 1884 the University of Toronto Senate established a new professional Civil Engineer degree designation in place of the old certification offered by University College. The new degree formally required the completion of the three-year SPS diploma in Civil Engineering along with three years of work experience and the completion of a formal thesis (with drawings) on a topic related to the field. In 1892 the SPS began to offer an optional fourth year, the completion of which would allow graduates to become eligible to apply for the new Bachelor of Applied Science designation at the University. In 1900 ties between the School of Practical Science and the University of Toronto had become so close and intertwined that it would no longer be prevented: the SPS was dissolved and formally became the Faculty of Applied Science and Engineering at the University of Toronto. By 1909, the three-year diploma originally offered by SPS was phased out, making way for a new, mandatory four-year degree program leading to the Bachelor of Applied Science degree fully certified by the University. Source ref - <http://civil.engineering.utoronto.ca/alumni/history/>

usually explained by claiming that the engineering profession, new and still professionalizing, sought association with the University to achieve credibility and status, and that the amalgamation represented an “academicizing” of the School's practical engineering education. But a close look at relations between the two institutions tells a different story. It was the University, not the School, that sought the association, for the University had at least as much, if not more, to gain as did the School. Further, despite an administrative convergence between the two institutions in the years prior to their amalgamation, the School stayed true to its founding purpose as a practical, professional school, academically distinct from the University. The School of Practical Science was the creation not of a young profession seeking better training and status, but of a province trying to boost economic growth.

## Notes on "Civil Aviation"

It was first proposed in 1871 by a two-man commission established by the Sandfield Macdonald government to investigate science and technology schools in the United States, with a view to creating such a school in Ontario. the government continued

to be wary of the heavy cost of its operation and uncertain about its relations with the University. When it did open, the new school, reflecting these concerns, was a dual-purpose institution—a provincial professional school, paid for by the government (but on the university campus where, to save money, it could make use of the nearby University College professors as instructors) and, at the same time, a new university building that provided teaching and laboratory space for the college professors and their students. It did have its own board, but this consisted of the School's instructors, nearly all University College professors. in

the fall of 1889, a full program in mechanical engineering, renamed electrical and mechanical in 1892. There were in 1905 some 1200 students in Arts (including Sciences), 650 in Medicine, and nearly 500 in Applied Science and Engineering—the three main faculties of the new University. The University brought tradition, authority, and high standards of book-based scholarship. The SPS brought utility, connections with the real world, and a nearly thirty-year tradition of provincial government support. SPS students spent ten to fifteen hours every week—about one third of their time—on "Engineering Drawing," in which they learned and practised drawing, lettering, cartography, and descriptive geometry (a method of finding graphical solutions to complex mathematical problems). University students took no such thing. SPS students also had a practical experience requirement in their program s that university students did not have. The School's own certificate was the SPS Diploma, awarded after completion of the three-year program ; with this, the University had no involvement. But in 1884, the University began to offer a C.E. (Civil Engineer) degree to working engineers; the requirements were a three-year SPS diploma, three years of work experience in civil engineering, and an essay (including drawings) on an engineering subject. It superseded an old degree that had been available at University College since 1851 but which only seven men had ever obtained. The C.E. was more of a formal professional designation than a true degree, but it was awarded by the University nonetheless. the B.A.Sc., a university degree introduced

in 1892 for students who took an optional fourth, post-diploma year, and completed a thesis. The force behind the creation of this

degree is hard to identify, but it seems to have been primarily a need to offer more instruction than could fit into the three-year program. Then, in 1909, the three-year course and the diploma were terminated; students entering that fall had no choice but to begin a four-year program that led to a university B.A.Sc. Most students were by this time taking the optional year, and the SPS itself, of course, had ceased to exist in 1906, so the three-year diploma no longer had a purpose. But the end of the diploma did not mean the end of the School's academic independence. Although a university degree, the B.A.Sc. belonged in practice only to the Faculty of Applied Science and Engineering; the Faculty always set its requirements, and nobody other than Faculty graduates could receive it. Several United States historians who have studied the origins of the modern university (the "American university," they call it) see "utility" and "research" as two distinct streams. This perspective is helpful in the present instance. In social science, for instance, research was practical from the start (We have Mackenzie King's sojourn at Chicago to remind us of that.) And science was, of course, never entirely "non-useful." But by and large "utility" in universities meant vocationalism—professional schools teaching usable skills rather than imparting culture. Research as a scholarly ideal was something else. It, too, entered universities in the late-nineteenth century, but not through the professional schools. It was the conviction that utility should be part of the University's character, not a belief in the research ideal, that made the commissioners of 1906 believe

that joining the SPS to the University of Toronto was the right thing to do. - **Source Ref : Richard White - Professionals and Academics: Relations Between the School of Practical Science and the University of Toronto, 1878-1906.**

1878 : British War Office gives authority for the formation of a Royal Engineer establishment at Woolwich Arsenal to develop experimental balloon and field equipment for "Practical" purposes. *Royal Engineers, Captain H.P Lee and Capt. J.L.B Templer appointed for the purpose and given 150 pounds for construction of a balloon.* <sup>13</sup>

1878 : Woolwich Arsenal staff:

- A. Officer in Charge, Railways : *Captain H.P Lee*
- B. Officer *Capt. J.L.B Templer*

### CANADIAN AVIATION - 1884

1884-5 : Balloons used by the British Army for observation purposes during the wars in Sudan and Bechuanaland.

<sup>13</sup> Brigadier P.W.L Broke-Smith "The History of Early British Aeronautics" - The Royal Engineers' Journal, W&J Mackay Ltd. Chatham



### British Civil Service Commission - Candidates for civil employment

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The only way to stop the exercise of undue influence, absolutely, was to hand over the examinations to an independent authority that had no sort of connection either with the nominating ministers or with the heads of the departments (when the latter were not the nominating authority, who required the new recruits for the filling of vacancies on their respective staffs)—the independent authority being responsible only to Parliament.

This step was taken more than half a century ago by the creation of the Civil Service Commission, which had its origin in an Order in Council dated 21st May, 1855.

The appointment of this Commission marks quite an era in the history of the British Civil Service ; and it is not saying too much, at this distance of time, to assert that the proceedings of the Commissioners have been in all ways beyond reproach and beyond the faintest suspicion of undue influence, judging by the only criticism—the admirable results which have ensued.

Although the notable event does not mark the actual commencement of open competition for Crown appointments, it does practically indicate the opening of the door for ability as distinguished from undue influence and intrigue ; and it was very properly regarded as the " first step " in the right direction.

Candidates for civil employment were made to know that something more was required than mere political or other " influence."

This, at first, was necessary, as it still is in certain cases, to obtain nomination ; but it was useless without those qualifications for a post, the due possession of which must be determined by an impartial " Board," assisted by a staff of able examiners.

The road, therefore, was thus prepared for the eminently popular step which was taken fifteen years afterwards, namely, in 1870. An Order in Council was again the medium by which the great change was effected, and this order was dated the 4th June, 1870. From its operation, however, were exempted :

- (i) appointments, such as Commissionerships, made directly by the Crown ;
- (2) any appointments made by the Treasury under the terms of Section 4 of the Superannuation Act of 1859 ; and
- (3) new appointments as they might be termed (although they are not fresh appointments from outside) by promotion within the department.

As to the exemption marked (i), it still holds and for reasons that will be fully explained in Chapter V.

The exemptions under (2) also still apply, and these will be more fully dealt with in Chapter V ; but here it may be briefly stated that they relate chiefly to persons holding such expert or professional qualifications as could not easily and readily be determined by the Civil Service Commissioners.

As to exemption (3), obviously it would not be fair to bring promotion which a man has earned within a department to which he had already obtained access, under the operation of an open outside competition, for his " qualifications " would have been shown inside and not outside the Service.

It will be well to state at once that the instituting Order in Council of June 4th, 1870, just referred to, was cancelled by a subsequent replacing Order in Council dated 10th January, 1910 ; but before coming to deal with that, it will be interesting to trace the progress of the movement for what may be called the popularisation of the Civil Service in the forty years from 1870 to 1910.

The resulting sketch will make this chapter rather a long one ; but apology will not be needed for this, considering that the reader may probably regard it as the most interesting chapter in the volume.

For the purposes of open competition a distinction was made by the division of the clerical establishments of the Civil Service into two classes, called respectively Class I and Class II.



## Notes on "Civil Aviation"

The bulk of the departments were grouped under Class II, and some, considered more important, were placed under Class I. Rates of salary and promotions differed widely in the two classes. In certain departments, too, a subordinate and still lower-paid grade of assistants, called sometimes Extra Clerks and sometimes Temporary Clerks, Copyists, and Writers, were engaged. But the system generally was productive of many anomalies, and was rectified by the adoption of one introduced by a Commission of Enquiry, presided over by Dr. Lyon Playfair, m.p., and usually known and referred to as the "Playfair Commission."

Its recommendations led to the separation of the Service into a "Higher" and a "Lower" Division, entrance to which was obtained by open competitive success in separate examinations: the Higher Division examination being much "stiffer" than the Lower Division one; and the commencing and subsequent salaries being also appreciably higher.

Under the same system a sort of floating body of Men Clerks and of Boy Clerks was established and maintained, and they were required to do the less important work, and to work wherever their services might be required. It was laid down, too, that in the case of any increase in the personnel of an office the same system should be continued and perpetuated—distinction being made between the amount of superior and inferior work.

Thus it came about that the work previously done by Writers or Temporary Copyists should thereafter be done by Lower Division Clerks unless the work performed was really copying only—a species of labour requiring practically little skill or intelligence.

The "Copyist" system was found, however, to be unsatisfactory as first instituted, and bare of any advantage—or stimulus to excellence. Certain privileges were therefore added, such as the payment of an annual bonus, after eight years' service, and a gratuity in the case of retirement. The chance was also given of occasional access to the ranks of the Lower Division.

Under the Playfair system, however, there was practically an impassable barrier set up between the Upper Division and the Lower Division; and for that and other reasons it was not found that the "scheme" (Programme) worked satisfactorily. Subsequent enquiries were made by a Commission appointed in 1886, under the chairmanship of Sir Matthew White Ridley.

This Commission is commonly referred to, under the name of its president, as the "Ridley Commission," and taking certain departments seriatim, it issued several reports and made recommendations, some of which were adopted by the Government.

A clean sweep was nevertheless made of all preceding minutes, orders, and regulations by the Order in Council of January the 10th, 1910, some verbatim extracts from which will, with such interlineary comments as may be necessary, give the reader a good grasp of the present regulations for the admission of future entrants to the honourable position of Civil servants of the Crown.

It will be understood that this order relates only to what is called the Home Civil Service, and not to any Colonial Services or to the India Civil Service.

The preamble of the Order in Council of the 10th January, 1910, runs:

—  
"Whereas by several Orders in Council, . . . provision has been made for testing according to fixed rules the qualifications of persons who may seek, or be proposed, for appointment, either permanently or temporarily, to situations or employment in any of His Majesty's Civil Establishments, and for regulating the conduct of His Majesty's said Civil Establishments and the conditions of Service therein.

"And whereas it is expedient that so much of the aforesaid orders as is now in force should be consolidated, with certain amendments, into one Order in Council.

I

"I. Now therefore His Majesty, by and with the advice of His Privy Council, doth order, and it is hereby ordered that, as from the date of this order, so much of the aforesaid orders as is now in force shall be repealed, and that the provision following " (extracts from which we make) " shall have effect in substitution for them:

—  
"Provided that such repeal or substitution shall not affect the validity of anything done under or by virtue of such orders or any of them.

"Provided also that nothing in this order shall affect any right, privilege, or exemption enjoyed by any person in His Majesty's Civil Establishments under Regulations in force at the date of the passing of this order."

## Notes on "Civil Aviation"

These last two "provisions" are only in keeping with precedent so far at least as the Civil Service is concerned.

The new Pension Act, for instance of 1909, to which reference will be made later on, does not affect compulsorily anyone in the service prior to its passing, although old entrants had the option of voluntarily enrolling themselves under its provisions.

Government, in fact, is more scrupulous perhaps than private employers generally in strictly and honourably carrying out its undertakings.

What may be called a little "pressure" may sometimes be employed by the high administering departments, such as the Treasury, in order to induce the rapid adoption of changes; but a Civil Servant has only to "insist" firmly upon his "rights," bestowed by Act of Parliament, Order in Council, Treasury Minute, or other authoritative pronouncement, to secure absolute attention to them.

In this respect Civil Servants are in a much more independent position than those in employ outside the charmed circle of His Majesty's Service; and this is a general factor of importance to be considered by would-be entrants.

We will now proceed with the Order in Council of the 10th January, 1910:

—  
"2. Such persons as His Majesty in Council shall have approved shall be His Majesty's Civil Service Commissioners (hereinafter called the Commissioners):

- i. for testing the qualifications of the persons proposed to be appointed to any situation or employment in His Majesty's Civil Establishments,
- ii. and for testing, in conformity with regulations to be from time to time issued by the Army Council:
  - i. the literary qualifications of candidates for admission by means of competitive examinations to:
    - i. the Royal Military College at Sandhurst, and to
    - ii. the Royal Military Academy at Woolwich,
- iii. and shall hold their offices during the pleasure of His Majesty;
- iv. and shall have power, subject to the approval of the Lords Commissioners of His Majesty's Treasury (hereinafter called the Treasury) to appoint from time to time such assistant examiners and others as may be required to assist them in the performance of the duties herein assigned to them.

"Provided that any Commissioner appointed for the purposes aforesaid may, subject to the approval of the Treasury previously obtained, by writing under his hand authorise the Secretary for the time being to the Civil Service Commission to act as Commissioner at any time during the absence of any of the Commissioners or during any vacancy among the Commissioners or for such period during such absence or vacancy as may be fixed by such authorisation.

"The Secretary, when acting in pursuance of such authorisation, shall have all powers, duties, and authorities assigned by this or any future Order in Council to the Commissioners for the time being appointed for the purposes aforesaid."

This is a very salutary and necessary arrangement in the case of a body like the Civil Service Commissioners; because otherwise, owing to the sudden illness or death of a Commissioner there might be a serious delay, involving very considerable public inconvenience, in filling vacancies in the departments. The wheel of State must roll on and should not be, even temporarily, stopped by the illness or death of a Commissioner.

The order continues:

- "3. Subject to the provisions of Clause 7 of this order and to the exemptions specified in the schedule marked B, appended hereto:
- i. the qualifications of all such persons as may seek or be proposed for appointment, either permanently or temporarily, to any situation or employment in any of His Majesty's Civil Establishments shall, before they are so appointed, be tested by, or under the directions of the said Commissioners; and
  - ii. no person (save as excepted in the said Schedule B) shall be appointed to any such establishment until a certificate of his qualification shall have been issued by the Civil Service Commissioners declaring that he has satisfied them:
    - i. 1st, that he is within the limits of the age prescribed for the situation or employment to which he desires to be admitted;
    - ii. 2nd, that he is free from any physical defect or disease which would be likely to interfere with the proper discharge of his duties;
    - iii. 3rd, that his character is such as to qualify him for such situation or employment; and
    - iv. 4th, that he possesses the requisite knowledge and ability to enter on the discharge of his duties'

## Notes on "Civil Aviation"

The text of Schedule B which sets out the exemptions from the operation of the open-competition system is as follows :

- (i) All situations to which the holder is appointed directly by the Crown ;
- (2) All situations included in any order or warrant made by the Treasury under Section 4 of the Superannuation Act, 1859 'y
- (3) All situations which are filled, in the customary course of promotion, by persons previously serving in the same department ; and
- (4) All situations which have already been added to the Schedule B, attached to the Order in Council of 4th June, 1870, and have not since been withdrawn therefrom."

Section 4, just alluded to, of the Superannuation Act of 1859, is as follows : " It shall be lawful for the Commissioners of the Treasury from time to time, by any order or warrant, to declare that for the due and efficient discharge of the duties of any office or class of offices to be specified in such order or warrant, professional, or other peculiar qualifications, not ordinarily to be acquired in the public service, are required, and that it is for the interest of the public that persons should be appointed thereto at an age exceeding that at which public service ordinarily begins ; and by the same or any other order or warrant to direct that when any person now holding or who may hereafter be appointed to such office or any of such class of offices, shall retire from the public service a number of years, not exceeding twenty, to be specified in the said order or warrant, shall, in computing the amount of superannuation allowance which may be granted to him under the foregoing section of this act, be added to the number of years during which he may have actually served, and also to direct that in respect of such office, or class of offices, the period of service required to entitle the holders to superannuation may be a period less than ten years to be specified in the order or warrant ; and also to direct that in respect of such office, or class of offices, the holder may be entitled to superannuation, though he may not hold his office directly from the Crown, and may not have entered the service with a certificate from the Civil Service Commissioners ; provided always that every order or warrant made under this enactment shall be laid before Parliament."

### A Civil Service Commission

"attends to the proper conduct of examinations of those who present themselves as candidates for employment under Government."

- V. Expert Qualifications • 53
- VI. Age Limits . . 58
- VII. Character Requirements . 61
- VIII. Educational Status Needed . . . 64
- IX. Health Conditions . . 69
- X. Starting the Service Career . . 71
- XI. Punctuality 75
- XII. Ability . . 78
- XIII. Industry . 82
- XIV. Zeal. 86

Source : THE BRITISH CIVIL SERVICE HOME, COLONIAL, INDIAN, AND DIPLOMATIC BY FRANCIS GEORGE HEATH LATE VICE-CHAIRMAN OF THE CIVIL SERVANTS DEFERRED PAY COMMITTEE. GRAFTON & CO. COPTIC HOUSE, 8 COPTIC STREET LONDON, W.C.

## CANADIAN AVIATION - 1886

### The "Playfair system" and the "Ridley Commission"

Under the "Playfair" system, however, there was practically an impassable barrier set up between the Upper Division and the Lower Division ; and for that and other reasons it was not found that the "scheme" (Programme) worked satisfactorily. Subsequent enquiries were made by a Commission appointed in 1886, under the chairmanship of Sir Matthew White Ridley. This Commission is commonly referred to by the name of its president.

## CANADIAN AVIATION - 1888

## Notes on "Civil Aviation"

1888 : **Aerial Arm of the** Royal Engineers **established to investigate lighter than air craft**. R.E balloon school established in Chatham, Kent, England.

### CANADIAN AVIATION - 1889

The Interpretation Act - 1889

### CANADIAN AVIATION - 1890

1890 : Royal Engineers' balloon school is relocated to Aldershot where the Royal Engineers form a permanent balloon section and depot.

09 October 1890 : Clement Ader of France builds and flies "Eole" a steam-powered, bat-winged "Avion" mono-plane.

1890 Sir Hiram Maxim carries on a series of experiments on a captive machine of large size. The plane had a total lifting surface of 6,000 square feet and weighed 8,000 pounds. It was driven by two specially designed steam engines weighing 310 pounds and capable of developing ??? horse-power. lifting effect of 3,000 to 4,000 lbs was obtained, and on one trial the machine broke away from its upper guide rails.

### CANADIAN AVIATION - 1900

02 July 1900 : Lake Constance, Germany. Count Von Zeppelin, a former cavalry officer successfully flies the 1st rigid Air-Ship from his company's facility. By 1914 the Zeppelin will have advanced to a practical (meaning a successful flying machine) design with military capabilities.

### CANADIAN AVIATION - 1902

1902 : Wallace Turnbull builds Canada's first wind-tunnel.

1902 : Nationalism and patriotism began to reach its hallmark in the Edwardian period when schools are encouraged to extend the leaving age.

1902 : The Balfour Act assumes control of all Grammar schools for the first time.

Up until this time, they had been charitable or locally provided schools. Local Education Authorities were set up to systematise the provision of education - although most students still left school at 11 and with very little historical education at all. But more did stay on, some went to higher elementary schools to learn more maths and science but the number who went to grammar schools increased too. The curriculum was now supposed to be under the control of these LEAs but they tended to keep and maintain the patriotic elements of the old charity schools. - Src: <http://www.britishempire.co.uk/article/historyteaching.htm>

### CANADIAN AVIATION - 1903

1903 : United States - Washington D.C

Samuel Pierpont Langley is secretary of the Smithsonian Institution and a "scientist of flight".

1. Langley studied the flight of birds for years.
2. in the late Langley 1890s had flown "a model" of his "aero-drome" almost a mile in powered heavier-than-air flight. <sup>14</sup>
3. in 18XX Langley commissioned the design of a special "light weight" gasoline fueled engine for his Aerodrome - a water cooled "Radial Engine" which revolves around a fixed point.
4. Nine days before the Wright brothers' first flight, Langley catapults his full-scale "Aerodrome", with a pilot aboard, from a houseboat in the Potomac River for its' first test flight.

<sup>14</sup> <http://history.nasa.gov/SP-4103/ch1.htm#n4>

## Notes on "Civil Aviation"

### 5. The "manned Aerodrome":

1. Is a scaled up version of Langley's successful "model"
2. Is not designed to withstand the forces applied by the catapult.
3. suffers structural failure at launch and collapses in the air, crashing into the Potomac.

Langley and Co. are "ridiculed in the press" over the failure of his Aerodrome - "overshadowing, for a while, the unheralded success of the Wrights a few days later".<sup>15</sup>

23 March 1903 : The Wrights *file for a patent* on their flying machine

1903 : United States :

"The brief notice of Lilienthal's death which appeared in the telegraphic news at that time, aroused a passive interest which had existed from my childhood, and led me to take down from the shelves of our home library a book on "Animal Mechanism" by Professor Marey, which I had already read several times.

From this I was led to read more modern works, and as my brother soon became equally interested with myself, we passed from 1) the reading to 2) the thinking, and finally to 3) the working stage"- Wilbur Wright

**The 3 points Wilbur made and some questions on their order are important to note:**

### 1. The "Reading" stage :

1. What were they reading ?
2. Where did their "Reading material" come from ?
3. Did they subscribe to International journals ?
4. Did they exchange letters with other "Aerial Experimenters"
5. Who were these "Other" Aerial Experimenters ?

### 2. The "Thinking" stage : What were they thinking? or Were they more likely "logically Contemplating" and organising:

1. what had been tried & done and what worked vs
2. what had been tried & done that didn't work in order to determine
3. what had not been tried and therefore might or might not work

"It seemed to us that the main reason why the problem had remained so long unsolved was that *no one had been able to obtain any adequate practice*"- Wilbur Wright

### 3. The Working stage :

1. What did they do?
2. What steps did they take?
3. How did they ascertain that their ideas were sound?
4. What models did they make?
5. How long was their "Apprenticeship"

To the general populace, yet unaware of the Wrights' "scientific" research, it appeared that science had been bested by mechanics, scholarship and erudition humbled by mere cleverness and inventiveness.<sup>16</sup>

23 March 1903 : Wright brothers file basic patent a "wing warping" technique of lateral control in which the wings are "twisted in opposite directions to create a differential lifting force" - the same result achieved later by Glenn Curtiss using ailerons - a French invention...

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<sup>15</sup> <http://history.nasa.gov/SP-4103/ch1.htm#n4>

<sup>16</sup> <http://history.nasa.gov/SP-4103/ch1.htm#n4>

## Notes on "Civil Aviation"

### CANADIAN AVIATION - 1904

1904 : creation of Empire Day by Lord Meath as a way of popularising the concept of Empire. It was to be held on Queen Victoria's birthday, despite the fact that she had died three years earlier.

Empire Day was an idea taken from the dominions - Canada had been celebrating Queen Victoria's birthday since 1845.

Teachers and headmasters were encouraged to develop assemblies and lessons with pan-imperial themes. The students would then be rewarded with a half day off to celebrate the institution. This showed that the government was happy to patronise and expand on imperial themes especially in the aftermath of the Boer War but also with the rising Empire of Germany to face. Educational policy and popular culture were being harnessed to help foreign and defence policy.

21 May 1904 - Scientific American - Vol XC No. 21 - MUNN & CO., Editors and Proprietors - Published Weekly at No. 361 Broadway, New York. : The Aeronautical Institute of Great Britain proposes to carry out in the latter part of this year a series of trials with screw propellers designed for aeronautical purposes.

The trials are to be held in London, in some convenient building of suitable size so as to secure immunity from interference by variations in the force and direction of air currents.

The method of testing the propellers is to attach them to a motor provided with a carriage of known weight, which will be driven by the propellers along wires or rails.

The run will be as long as possible, and it is hoped in this way to secure valuable knowledge of the action of propellers, which cannot be gained by any other than a straightaway test such as this.

It is proposed at first to test only rotary propellers and those up to about four feet in diameter.

For this purpose, the Aeronautical Institute will provide a motor of from one-quarter to one-third horse-power, together with all the other necessary apparatus except the actual propellers, which will be supplied by those desirous of participating in the tests. Silver and bronze medals are to be awarded to the successful competitors.

### CANADIAN AVIATION - 1905

1905 : Federation Aero Nautique International "FAI" founded in France.

11-12 February 1905 : Englishman Hubert Latham accompanies his cousin, French balloonist Jacques Faure on a night crossing of the English Channel in a hot-air balloon.

### CANADIAN AVIATION - 1906

1906 : Mr. Beverley Shenstone born in Southern Ontario.

22 May 1906 : Wright brothers "basic patent" for a "wing warping" technique of lateral control in which the wings are "twisted in opposite directions to create a differential lifting force" is granted.

22 May 1906 : Patent Number 821393 is granted to the Wrights.

Langley seemed to contemporaries "a professor wandering in his dreams"; the Wrights were "known merely as practical mechanics" <sup>17</sup>

### CANADIAN AVIATION - 1907

March 1907 : First technical paper on Aircraft stability published by Canadian Wallace Turnbull.

1 June 1907 : Frank Whittle is born

5th October 1907 : first public flight of the British military semi-rigid airship (British Army Dirigible No. 1) 'Nulli Secundus' (Second to none) - Royal Engineers Balloon School, Farnborough. Britain's first military aircraft. Its initial design was

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<sup>17</sup> Gibbs-Smith, The Aeroplane, p. 59. The characterizations of Langley and the Wrights are from Mark Sullivan, Our Times, 1900-1925 (6 vols; New York: Charles Scribner's Sons, 1926-1935 [1971]), 1: 566, 568.

## Notes on “Civil Aviation”

carried out by Colonel James Templer (who formed the first British military ballooning establishment at Woolwich in 1878) and was completed by Colonel John Capper (head of the Royal Engineer's Balloon Factory) and the American, Samuel Cody (the pioneer aviator who also designed the man-lifting kite and the the first aeroplane to fly in Britain - piloted by himself). The airship was built at the balloon factory in Farnborough and made its first test flight on 10th September 1907. Her first public outing was made on the 5th October when Capper and Cody flew her from Farnborough to London. After flying over the city, she circled St Paul's Cathedral and then attempted to return to Farnborough, but strong headwinds caused her to land at Crystal Palace. The flight covered 50 miles and lasted 3 hours, 25minutes.

### CANADIAN AVIATION - 1908

1908 : **Mr. H. Short**, Mr. Oswald Short & Mr. Eustace Short found Short Brothers, London, England.

1908 : Experiments in Aeroplane “automatic stability”.

Mr. L.D.L Gibbs conducts experiments for the British Imperial War Office at Blair Atholl using an aeroplane designed by Mr. Dunne. **[the D.1?]**

1908 : Wright’s first publicized demonstration flights.

8 August 1908 : **Wilbur Wright**'s effortless banking turns and ability to fly in a circle amazed -flight of one minute 45 seconds - stunned onlookers at the Hunaudières track near **Le Mans, France** including **Louis Blériot**. the Wrights silenced European doubters.

1908 : Mr. Hubert Latham, a British gentleman of inherited wealth, engineer Leon Levavasseur and businessman Jules Gastambide team up to promote and exploit Levavasseur’s engine and aeroplane design, the “Antoinette” monoplane. The aeroplane [and the engine] is named after Gastambide's daughter. The aer-craft is powered by a Levavasseur engine originally used in a boat Mr. Latham had raced in Monaco which was also called 'Antoinette'.

## Notes on "Civil Aviation"

### CANADIAN AVIATION - 1909

19 March 1919 : Olympia Aero Show, 1st British Aero Show : Monsuier Seguin displays for the 1st time in England the "Gnome" engine. The gnome runs on Castor bean oil, weights 165 lbs and develops a reliable 50hp.

May 1919 : The steering drum on the Voison biplane (8 cly. E.N.V engine) owned by Mr. J.T.C. Moore-Brabazon slips at a "Crucial moment" while being flown at Shellbeach Aerodrome and the Voison is damaged. The Short Bros. are hired to accomplish the repairs, their first.

22 May 1909 : Hubert Latham makes a record flight of 37 mins. at the Chalons Camp some 90 miles east of Paris, where the Voisin brothers are based.

04 June 1909 : Hubert Latham again flies for 37 mins. at a height of between 20 and 25 metres. He displayed the utmost sang-froid while making this little trip, and during the second circuit, while passing over the heads of the spectators, he calmly takes his hands off the steering wheel, rolls a cigarette and lights it.

12 June 1909 : At 6:40 pm, Hubert Latham flies "Antoinette" uninterrupted at a height of 15-40 meters for 1h. 7m. 37s., thus setting up a new world's record for monoplane flight and beating all French records for monoplanes or biplanes. Apart from the Wright Brothers, the records for long flights which have hitherto been made were held by : Henry Farman, 20m. 19s. (July 6th 1908); Delagrangé, 29m.-54s. (August 6th, 1908); Paul Tissandier, 1h. 2m. (May 20th, 1909).

June - July 1909 : an "International Juridic Committee on Aviation" is organised at Paris <sup>18</sup>

Within the year began publishing the "Revue juridique internationale de la Locomotion atrieillie." <sup>19</sup>

The committee itself consists of jurists, lawyers and legal students in principal countries.

The national membership forms a national committee acting through a representative executive committee in Paris. This executive committee makes general studies upon a point of law and issues its preliminary decisions to national committees, which report back their opinions.

The importance of such work is shown by the experiences of the Institute of International Law.

Preliminary studies [by the Institute of International Law] have been the foundation of every international law codification in existence.

Beyond question, the committee's code *will be the basis* of diplomatic action *when time for that is ripe*.

The American committee consists of:

1. James Brown Scott, 2 Jackson Place, Washington, national delegate to executive committee;
2. Charles F. Beach, 95 rue des Petits- Charaps, Paris, national reporter;
3. Denys P. Myers, 40 Alt. Vernon Street, Boston, national secretary;
4. Arthur K. Kulin, New York City;
5. Gov. Simeon E. Baldwin of Connecticut,
6. George Whitelock of Maryland,
7. William W. Smithers of Pennsylvania,
8. Joseph W'heless of Missouri and
9. Ambrose Kennedy of Rhode Island.

July 1909 : Mr. Hubert Latham begins wearing an over-garment on top of his clothing that is made from the fabric used to make the protective garments of fencers in epee competitions. Latham's "White Flying Suit" [white cover-alls] is intended to protect him from being punctured by splinters from the wooden members of his aero-plane in the event of a crash. [Others pick up the idea]

July 1909 : Silver Dart flown is and crashed at Petawawa, Ontario before the officers and the deputy minister of militia.

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<sup>18</sup> (Source ref AERONAUTICS, July 31, 1914. - pg. 20 THE INTERNATIONAL CODE OF AERIAL LAW)

<sup>19</sup> (Source ref AERONAUTICS, July 31, 1914. - pg. 20 THE INTERNATIONAL CODE OF AERIAL LAW)



## Notes on "Civil Aviation"

19 July 1909 : Daily Mail £1,000 prize for the first person to cross the English Channel in an aeroplane.

- French aviation pioneer Hubert Latham- French Pilot's Lic. No.9 - is the first person to attempt to cross the English Channel in an aeroplane. Flying an Antoinette IV, misses being the first man to fly the Channel by some 300 yards and is credited with being the first individual to land an airplane on water - when his engine failed mid-channel. The "Antoinette" was destroyed while being retrieved and a new aeroplane was requested by Latham to make another attempt at the £1,000 prize offered by the Daily Mail. Competitors for the £1,000 prize that day were Louis Bleriot and his monoplane [No 9] and Count Charles de Lambert with a Wright biplane. Lambert came equipped with a complete spare. Latham and Bleriot arrange for a race to take place at first light on the morning of July 25.



25 July 1909 : Daily Mail £1,000 prize for the first person to cross the English Channel in an aeroplane.

Latham's engineer Levavasseur failed to wake either his pilot or his team from their sleep in time to get the new Antoinette [No. VII] ready to fly at dawn.

Louis Blériot is aloft by 04:41 and crosses the 31 mile English Channel from Les Baraques, near Calais, France to Northfall Meadow at Dover, England without a watch or compass flying between 150' and 300' at approx 45 mph, arriving at about twenty minutes past five (French time) winning the Daily Mail's £1,000 prize. Police Constable Stanford being the only eyewitness of this landing of the first flyer to cross the Channel. Blériot arrival with terra-firma was rather abrupt; in fact, not only was the propeller broken, but the framework which carried the engine was also damaged."

French pilot's licence No.1 is issued to M. Bleriot.

Hubert Latham makes a second attempt to fly the straits in the new Antoinette [after being notified by Bleriot that Bleriot will "Share the Prize Money" if he can make the crossing] and is within minutes of landing at Dover when engine failure once again places him in the water - a few hundred yards short of land.

20-30 July 1909 : United Kingdom Aero-Club pilot's licence No. 1. issued to Lt/Col J. T. C. Moore- Brabazon

11 August 11, 1909 : First aircraft designed and built in Canada:

The Baddeck No. 1 flies 100 meters before crashing in front of officers and the deputy minister of militia at Petawawa, Ontario.

1909 : Great Britain:

Mr A.V. Roe, aero-experimenter, works on building a "Tri-Plane" with a 10hp J.A.P air-cooled engine - a first - on the Lea Marshes, UK.

Mr. Roe comes to realise that the tail of an aircraft should be raised while gaining speed for take-off. [most aircraft are flown-off in a stall at this period]. Incensed at being prohibited from using the "Public Commons and Parks" around London for his experimentation, he writes a letter to FLIGHT, complaining of "Unnecessary red tape" stating that his own personal aerodrome was "covered with stumps and that twice his machine had suffered damage by colliding with these obstructions" [was he complaining or was he trying to say that he could fly from the commons and parks as his machine would withstand the trees?]

1909 : Col. Templer, Commandant of the Balloon Factory, Farnborough - helps persuade Secretary of State for War - Lord Haldane - to press for the formation of a body of distinguished persons who could give guidance in aeronautical matters. The result is the British Advisory Committee for Aeronautics (ACA) being set up to advise the United Kingdom War Office and the Admiralty on

## Notes on "Civil Aviation"

matters relating to flight in UK military service. The National Physical Laboratory accomplishes much of the theoretical work, the Royal Aircraft Factory - Farnborough, the practical work.

British Advisory Committee for Aeronautics members:

1. Col. Mervyn O'Gorman, R.a.f - Farnborough as Superintendent 1909 - 1916

22 August 1909 : Reims, France - first international air race.

Eugène Lefebvre, Chief pilot for the Wright Company in France, is fined \$4 by the judges for "*displaying excessive recklessness and daring.*" The fine is from "for stunting" his air-craft towards and over the crowd.

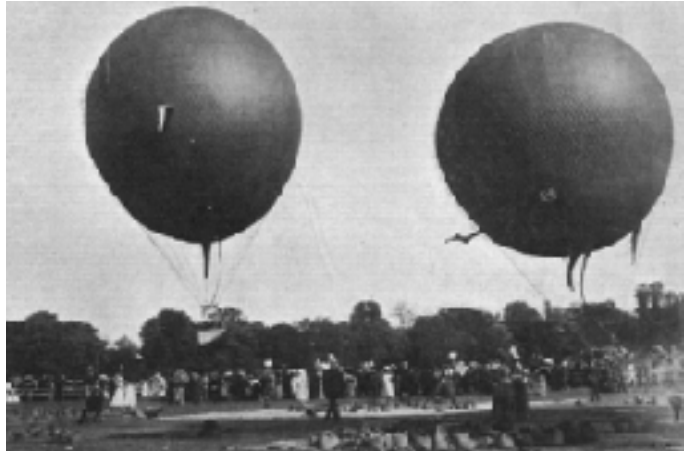
7 September 1909 : Juvisy France :

Eugène Lefebvre, Chief pilot for the Wright Company in France, wins more recognition.

He becomes:

1. The first person to die *while piloting a powered airplane*, and
2. The second person to be killed *in a powered airplane* crash.

1909 : Handley Page becomes the first UK company created "*solely for the design and manufacture of Aeroplanes*".



19 October 1909 : South Farnborough, England : Royal Aircraft Factory staff <sup>20</sup> :

- I. Superintendent : . O'Gorman, Temp. Lt.-Col. M. J. P., C.B., Hamps. Aircraft Parks, R.F.C., T.F
- II. Assistant Superintendent : Heckstall-Smith. Temp. Maj. S., Hamps. Aircraft Parks, R.F.C., T.F
- III. Assistant Engineer Designs : Green, Temp. Capt. F. M., Hamps. Aircraft Parks, R.F.C., T.F
- IV. Assistant Engineer Production : Turner, Temp. Capt. G. B., Hamps. Aircraft Parks, R.F.C., T.F
- V. Assistant Engineer Physical Research : Not staffed / not named
- VI. Assistant Engineer Supplies : Maxwell, Temp. Lt. R. M. 8., Hamps. Aircraft Parks, R.F.C., T.F
- VII. Assistant Engineer Fabrics : Jones, Lt. B. M.. Load. Sig. Co., R.E

30 October - 01 November 1909 : Wright Aeroplanes built under license in Great Britain

Short Bros. complete the 1st license built Wright aeroplane [in the UK] which is delivered to Mr. C.S. Rolls at Shellbeach.

Their 2nd license built Wright aeroplane [in the UK] is sold and delivered to Mr. A. Ogilvie at Rye, Camber-sands.

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<sup>20</sup> THE MONTHLY ARMY LIST - JUNE, 1916 pg 1515 - <https://deriv.nls.uk/dcn17/1080/0283/108002834.17.jpg>

**CANADIAN AVIATION - 1910**

1910 : Aircraft in the UK and elsewhere are being expressly designed to "Avoid infringing upon the Wright patents".  
The Wrights are bringing a large amount of expensive and fruitless litigation"<sup>21</sup> to those who infringe..."

4 January 1910 : Leon Delagrange is killed at Bordeaux, France when the wings on his Blériot mono-plane collapse in mid-air.

05 January 1910 : Herbert Chatley reads his aeronautical paper before the Institution of Civil Engineers of Ireland - in a follow up paper by him entitled "The Construction of an Aeroplane" read in his absence in 1912 "The President the Institution of Civil Engineers of Ireland said the Paper was one of "great interest upon a subject of great and growing importance."Enormous improvements had been made in a short time. At the end of 1910, there were no flying machines in the world, which would satisfy the specified tests laid down by the French Government for aeroplanes to be constructed for the army. Since then, very severe tests on 31 different types of machines were carried out by the French and nine different types successfully passed the tests. The tests required that each machine should carry 600 lbs, that it should fly at the rate of at least 37 miles an hour, that it should carry out, without stopping a flight of 186 miles, that it should be capable of starting from and alighting on three kinds of ground, first from stubble, second from a growing crop of lucerne (alfalfa), and thirdly from ploughed land. At that time, he said, the French government had 170 aeroplanes for the use of the army and 73 trained air-pilots. In France, the President of the Institution continued, the people are so positive that aeroplanes are the demand of the age that it has been proposed that the army should have a thousand aeroplanes at their service"

10 - 20 January 1910 : Los Angeles California : International Air Meet.

16 January 16, 1910 : The International Juridic Committee on Aviation decides upon the *outline text of an international "legal code of the air"* <sup>22</sup>, this "Code of the Air" comprises 2 "books" - which are neither formally adopted or implemented:

1. Book I. Public Aerial Law.
2. Book II, "Private Aerial Law"

**1910 INT'L JURIDIC COMMITTEE ON AVIATION : BOOK I - "PUBLIC AERIAL LAW"**

**Public Aerial Law - Chapter I : General Principles of Aerial Circulation** <sup>23</sup>

Article - 1.

Aerial circulation free, except for right of subjacent states to take certain measures with a view to own security and that of persons and property of their inhabitants.

Article - 2.

It is prohibited to pass above fortified and military works, etc., or neighbourhood within a radius determined by the military authorities.

Article - 3.

Administrative and police authorities regulate or prohibit circulation above built-over areas.

**Public Aerial Law - Chapter II : Nationality and Registration of Aircraft** <sup>24</sup>

Article - 4.

Every aircraft must have one nationality only.

Article - 5.

Nationality of aircraft that of owner. If aircraft belongs to a company, nationality that of headquarters of company.

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<sup>21</sup> Dallas Brett, "Brooklands Developments " The History of British Aviation Vol. I - pg. 60-61 ; publisher - The Aviation Book Club, 32 Bloomsbury St. London WC1

<sup>22</sup> "THE INTERNATIONAL CODE OF AERIAL LAW" published in AERONAUTICS, July 31, 1914. - pg. 20

<sup>23</sup> "THE INTERNATIONAL CODE OF AERIAL LAW" published in AERONAUTICS, July 31, 1914. - pg. 20

<sup>24</sup> "THE INTERNATIONAL CODE OF AERIAL LAW" published in AERONAUTICS, July 31, 1914. - pg. 20

## Notes on "Civil Aviation"

If owners of aircraft are of different nationalities, its nationality will be that of joint owners who possess two-thirds value.

Article - 6.

Every aircraft must bear sign indicative of nationality.

Article - 7.

Every aircraft must carry descriptive document containing information proper to individualise.

Article - 8.

1. Every owner, before putting craft into circulation outside private aerodromes, must have obtained *from public authorities, inscription upon a register of matriculation* kept by [the] proper authority.
2. Each state regulates registration within own territory.

Article - 9.

Aircraft must bear distinctive mark indicating place of registration.

Article - 10.

Registration lists will be published.

### Public Aerial Law - Chapter III : Landing and Alighting on water <sup>25</sup>

Article - 1 1.

Aircraft may:

- (a) land upon unenclosed properties;
- (b) also alight upon and navigate all waters.

Article - 1 2.

Except in the case of "force majeure," this right is prohibited to them:

- (a) in the boundaries of closed properties;
- (b) within the boundaries of areas built over, ports and roadsteads, outside of spaces reserved for this purpose;
- (c) in navigable channels where the difficulty of passage necessitates this prohibition, which must be expressly formulated by the competent authorities.

Article - 13.

Every aircraft which enters above a prohibited zone is to alight at first signal from competent authorities as soon as possible.

### Public Aerial Law - Chapter IV : Jettison <sup>26</sup>

Article - 14.

Jettison consists in any voluntary throwing overboard of objects.

Article - 15.

Jettison of all nature to injure persons or property is prohibited, except in case of imminent danger.

Article - 16.

In any case, damage alone gives cause for reparation.

### Public Aerial Law - Chapter V : Wrecks <sup>27</sup>

Article - 17.

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<sup>25</sup> "THE INTERNATIONAL CODE OF AERIAL LAW" published in AERONAUTICS, July 31, 1914. - pg. 20

<sup>26</sup> "THE INTERNATIONAL CODE OF AERIAL LAW" published in AERONAUTICS, July 31, 1914. - pg. 20

<sup>27</sup> "THE INTERNATIONAL CODE OF AERIAL LAW" published in AERONAUTICS, July 31, 1914. - pg. 20

## Notes on "Civil Aviation"

Whoever finds all or part of disabled and abandoned aircraft must make declaration thereof to proper authority.

Article - 18.

Competent authority, when duly advised, will immediately take the measures necessary to assure the preservation of wreck and discovery of owner.

Article - 19.

Owner of wreck:

- (a) may reclaim it from the authorities in charge within period of one year from discovery by paying expenses of preserving, in addition
- (b) he must pay finder premium of discovery calculated on the basis of 10 per cent, of value on the day of restitution, minus expenses.

### **Public Aerial Law - Chapter VI : Legislation applicable to Jurisdiction Competent in respect to Aerial Locomotion** <sup>28</sup>

Article - 20.

Aircraft which is above the high sea or territory not under the sovereignty of any state is subject to legislation and jurisdiction of country whose nationality it possesses,

Article - 21.

When an aircraft is above territory of a foreign state, the acts committed and the deeds occurring on board, which are of a nature to compromise security or public order of subjacent state, are regulated by the legislation of territorial state and judged by its courts.

Article - 22.

- I. Reparation for damages caused to the persons and goods above the territory of the subjacent state by an aircraft is regulated by the law of this state.
- II. The action for relief may be brought either before the courts of this state or before the courts of the state whose nationality the aircraft possesses.

Article - 23.

- I. Acts committed and deeds occurring in space on board an aircraft and which do not affect the security or the public order of the subjacent state remain subject to the legislation and the jurisdiction of the country whose
- II. nationality the aircraft possesses.

Article - 24.

- I. In case of a birth or a death on board during an aerial voyage, the pilot will make record thereof on the log-book.
- II. In the first place where the aircraft shall land the pilot will have to deposit a copy of the record which he shall have made. The deposit will be made as follows:
  - (a) If the place is part of the territory whose nationality the aircraft possesses, to the proper public authority;
  - (b) if the place is situated in foreign territory, in the hands of the consul whose nationality the aircraft possesses. In case there is no consul in this place:-
    - i) the copy of the record will be sent by the pilot by registered mail to the consular authority, or
    - ii) to the competent authority whose nationality the aircraft possesses.

### **1910 INT'L JURIDIC COMMITTEE ON AVIATION : BOOK II - PRIVATE (CIVIL) AERIAL LAW**

**TITLE I. : Civil Law**

**Private Aerial Law - Chapter I : Property Above** <sup>29</sup>

Article - 25.

<sup>28</sup> "THE INTERNATIONAL CODE OF AERIAL LAW" published in AERONAUTICS, July 31, 1914. - pg. 20

<sup>29</sup> "THE INTERNATIONAL CODE OF AERIAL LAW" published in AERONAUTICS, July 31, 1914. - pg. 20

## Notes on "Civil Aviation"

No one may, on account of a property right, hinder the passage of an aircraft under conditions which do not present for him any appreciable inconvenience.

Art.26.

Any abuse of the right of passage gives cause against its responsible author for action for damages.

### Private Aerial Law - Chapter II : Reparation for Damage caused by Aircraft <sup>30</sup>

Article - 27.

Reparation for damage caused by an aircraft either to persons or goods that are on the surface of the earth falls on the custodian of the aircraft, the right of the injured person to look to the one responsible at common law being unimpaired.

Article - 28.

The custodian, held to reparation for the damage done, has a recourse against the responsible author thereof in accordance with the common law.

Article - 29.

In case the damage should be due wholly or in part to the act of the person injured, the judge shall have the right to pronounce the total or partial exoneration of the custodian.

Article - 30.

The custodian may bring the exception of "force majeure" as a defense.

Article - 31.

The provisions of Art 27 are not applicable if, at the moment of the accident:

- I. the person injured or the thing damaged were transported by aircraft, or
- II. if the person injured was himself occupied in the management of the machine.

**NOTE :** The remainder of Book II, Private (Civil) Aerial Law, is yet to be worked out. <sup>31</sup>

March 1910 : Royal Aero Club issues Aeroplane Certificates - to Royal Engineers.

11 March 1910 : First flight of the "Dunne D.5" accomplished by designer J. W. Dunne at Eastchurch, England.

The Dunne is the first inherently stable aircraft in the world.

06 May 1910 : "**Camp de Chalons**", France.

The French War-office authorises aeroplane makers "the privilege of using Camp de Chalons as an aeroplane building / testing and pilot training ground" with the restrictions that "flying was to take place between certain hours, and was to be prohibited while the troops were at exercise".

Camp de Chalons then becomes a "great aviation centre to which pupils in the art of flying flocked" from all parts of the world.

1. nearly all the makers erected sheds between Bouy and Mourmelon,
2. Quite a large proportion of the visitors to the aeroplane makers are foreigners, and
3. it was reported that a number of German officers spent some time at Mourmelon in learning to fly ;
4. Flying machines were bought which presumably found their way to Germany.
5. The facilities thus offered to foreign military visitors to make a survey of the Chalons Camp and learn things that the military authorities would prefer to keep secret,

The French War-office now "discovers the distinct inconvenience" in allowing private aeroplane makers to use Camp de Chalons as a training ground. The private Aeroplane makers, their machines, students and customers are

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<sup>30</sup> "THE INTERNATIONAL CODE OF AERIAL LAW" published in AERONAUTICS, July 31, 1914. - pg. 20

<sup>31</sup> "THE INTERNATIONAL CODE OF AERIAL LAW" published in AERONAUTICS, July 31, 1914. - pg. 20

## Notes on "Civil Aviation"

now regarded as presenting a serious danger to the French military at Camp de Chalons and restrictions are imposed which tie the hands of aviators.

Aeroplane makers are therefore forced to seek out new training grounds:

1. Henry Farman transfers his operations to Etampes [where he inaugurated his new school by sending Paulhan on a cross-country flight to Arcy-sur-Aube, a distance of 120 miles.]
2. Sommer transfers his operations to

A few days prior to Farman's move to Etampes a cyclone devastates Camp Chalons, demolishing several sheds and destroying the aeroplanes within them.

Sommer's shed was moved 100 hundred yards without the aeroplane it contained being damaged.

### 06 May 1910 : The "Foreign Airship Controversy"

The controversy between the advocates of dirigible balloons of the rigid and non-rigid types has revived as the result of the destruction of the new Zeppelin airship which was constructed with the money raised by a national subscription immediately after the loss of the first balloon of this type.

While the rigid airship was adopted in Germany as the most suitable for military purposes, and a strategical base was established near Hamburg where sheds have been built to accommodate these huge aerial vessels, the French have always shown themselves averse to the rigid type, and the military authorities have hesitated to create an aerial fleet until more is known as to the possibilities of the dirigible balloon.

Under pressure of public opinion, which became alarmed at the German activity in airship construction, the French Minister of War has placed orders for dirigible balloons, and is even reported to have acquired an option on the new Bayard-Clement airship which was to have attempted the journey from Paris to London with a view to its acquisition on behalf of the British Government.

The Astra Company is also completing a dirigible balloon for the French military department. Both of these vessels are fitted with two engines which can be run separately or together, while the substitution of wood for metal propellers and other improvements have been suggested by experience with the dirigible balloons already in military service.

So far as concerns the superiority or otherwise of the non-rigid over the rigid type, there are, as yet, insufficient data to allow of any definite conclusion being come to, for it must not be overlooked that the Patrie suffered the same fate as the two Zeppelins, and neither type is apparently able, on account of its bulk, to withstand strong gusts of wind.<sup>32</sup>

### 22 June 1910 : First commercial airship flight

The first commercial airship flight takes place, as the Zeppelin Deutschland (LZ 7) flies from Friederichshafen to Düsseldorf, Germany, with 20 paying passengers – 10 men and 10 women – on board. Count Ferdinand von Zeppelin is at Deutschland's helm.

13 July 1910 : German blimp "Erbslöh" explodes in flight Leverkusen, Germany, killing her entire crew of five.

### 14 July 1910 : Toronto Aerial Display

Count Jacques de Lesseps with his Blériot monoplane at the Trethewey farm, July 1910. City of Toronto<sup>33</sup>. The meet took place in July 1910, seven year years after Wilbur and Orville Wright had managed **their first successful (if brief) aeroplane flight near Kitty Hawk, North Carolina**. In the latter years of the 1900s, daring aviation pioneers made headlines across the world, experimenting with new aircraft, and making many more flights, some more successful than others. Torontonians' first real opportunity to see the novelty of powered flight came in 1909, when **Charles F. Willard** provided demonstrations at **Scarboro Beach Park**. By some standards, Willard's flights had been of limited success; although he managed to get his **Curtiss** "Golden Flyer" into the air on three occasions, each of his flights ended with uneasy landings in Lake Ontario.

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<sup>32</sup> THE ENGINEER - MAY 6, 1910 pg 452

<sup>33</sup> <http://torontoist.com/2016/10/historicist-skys-limit/> The 1910 aviation meet and Count Jacques de Lesseps' flight over Toronto. BY **DAVID WENCER** OCTOBER 8, 2016

## Notes on "Civil Aviation"

In the summer of 1910, **Canada's first aviation meet** took place near Montreal, organized by the Automobile and Aero Club of Canada.

Though not financially profitable, the event attracted considerable public interest, with demonstrations and competitions featuring experienced pilots, most already famous for their flying exploits in other parts of the world. One week after the end of the Montreal meet, a second week-long event was held in Toronto, organized in part by the **Ontario Motor League**, featuring many of the same pilots and aeroplanes. The site chosen for the Toronto meet was owned by the Trethewey family, and was a functioning farm near **Weston**, just southeast of Jane and Lawrence. The relative novelty of aeroplanes meant that all the participating pilots had taken up aviation quite recently. **Ralph Johnstone**, **Walter Brookings**, and **Duval LaChapelle** were amongst several who came on behalf of the Wright brothers, who had assembled and trained their own, touring exhibition flying team earlier in the year. Others at the meet included **Gardner Hubbard**, described in the *Globe* as "a wealthy millionaire of Boston, [who] will bring a machine built by the McCurdy-Baldwin people of Baddeck, Nova Scotia," and **Cromwell Dixon**<sup>34</sup>, a 17-year-old pilot billed as the "boy aviator," who told the *Star* that he had been flying since he built his first dirigible balloon at age 13, but who had only first flown a monoplane at Montreal the week before. The most prominent aviator, however, was Count Jacques de Lesseps, the son of notable French diplomat **Ferdinand de Lesseps**. Jacques de Lesseps had made headlines earlier in the year when he made the second successful flight over the English Channel in "Le Scarabée," a monoplane constructed by French aviator and engineer **Louis Blériot**. De Lesseps had also made a name for himself at the Montreal aviation meet, when he had become the first to fly directly over a Canadian city.

### 27 August 1910 : First radio messages to the ground from an Aeroplane

pilots Frederick "Casey" Baldwin and John McCurdy flying a Curtiss biplane send messages to the ground via radio [W/T].

12 September 1910 : W.W. Gibson's "Twin Plane" Canada's first designed and built aeroplane "hopped" at Dean's Farm, Victoria BC.

22 September 1910 : W.W. Gibson : Twin Plane collision with a large tree , was not seriously hurt, and went on to build a much more realistic machine that flew several times in 1911 in Calgary. A further crash ends Gibson's pioneering efforts.

14 September 1910 : Zeppelin LZ 6 is destroyed by fire in her hangar at Baden-Baden, Germany.

September 1910 : The Bristol Company now operates an aircraft depot at Salisbury Plain and is developing "Farman Type" aeroplanes under supervision of British Military Authorities.

24 September 1910 : B. F. KEITH'S GRAND EDUCATIONAL DEMONSTRATION Presenting MR. CLAUDE GRAHAME-WHITE. The Famous English Aviator. Saturday, September 24th, 1910. Harvard Aviation Field. Atlantic, Mass. Issued with the Compliments of the Christian Science Monitor.

Claude Grahame-White was the Glamour Boy of early aviation. somewhat of a playboy, with no engineering background whatsoever, Grahame-White became enamoured of flying when, in 1908, he saw the Wright's demonstrate their invention to the French crowds at Camp d'Auvours. Within a relatively short time, self-taught, Grahame-White soloed his Blériot without a formal lesson. He quickly made a name for himself as a dashing aviator, when, in 1910, J. V. Martin of the Harvard Aeronautical Society, invited him to compete in the first Boston-Harvard Meet.

With the promise of a \$50,000 retainer & expenses, Grahame-White accepted and won that one (and others) as he thrilled spectators with his races & aerial exhibitions such as that announced in this "One-man Show" program.

This rare surviving play-bill lists the diverse aerial stunts to be performed by Grahame-White during the day with his Blériot Monoplane" and Farman Biplane - including a dive from 4000 feet "with engine stopped." 12 planned events included "Aerial switchback flying", "The corkscrew glide [spin?] from a high altitude." & "Knocking down ninepins placed on the ground, without alighting."

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<sup>34</sup> [https://en.wikipedia.org/wiki/Cromwell\\_Dixon](https://en.wikipedia.org/wiki/Cromwell_Dixon)





With this sort of exhibition, and his dashing & flamboyant personality, the handsome Grahame-White gave the new aviation field, previously dominated by engineers, something that had been lacking to date, a 'sexy' nature.

15 - 30 September 1910 : The Bristol Company co-operates with the British War Office for "participating" in the 1910 Army manoeuvres<sup>35</sup>:

1. Captain Dickson - flying a Bristol
2. Mr. Robert Loraine - flying a Bristol equipped with a Wireless Transmitter [W/T] transmitting observations of the army to a portable station at Lark Hill - 1/4 mile distant.
3. Lieutenant L.D.L Gibbs - flying a clipped wing "Racing" Farman.

At the end of the Army manoeuvres:

1. Mr. Robert Loraine continues with the W/T experiments. Range of transmission is increased to over 1 mile.
2. Maj. Sir A Bannerman placed in command of the R.E "Balloon Section", Farnborough (vice Col Capper)
3. British War Office authorises the R.E to "enlarge the scope of the work at the Balloon School [...] by affording opportunities for Aero-planning"

01 October 1910 : Hendon, UK

Mr. Louis Bleriot:

1. Opens the Hendon aerodrome to the general public.
2. Builds 8 aeroplane storage sheds [hangars]
  - a) 3 sheds are leased to "The Aeronautical Syndicate Ltd." [produces the tail-less "Valkyrie" monoplane]
  - b) 5 sheds stocked with Bleriot monoplanes w/ Gnome engines for instruction and sale.

<sup>35</sup> Dallas Brett, "Bristol Co. & the War Office" - The History of British Aviation Vol. I - pg. 60 ; publisher - The Aviation Book Club, 32 Bloomsbury St. London WC1

## Notes on "Civil Aviation"

3. Hires Mr. Pierre Prier as "Chief Pilot Instructor". Mr Frank H. Butler [balloonist] is their 1st pupil.

October 1910 : Milan Aero Meet, Milan, Italy

October - November 1910 : Paris Salon, Paris France :

Voisin displays a new 2 seat "Pusher" biplane:

1. On this type Voisin has "abandoned" [deleted] the vertical side curtains from between the interplane struts.
2. Adopted "Ailerons" for control
3. mounted a mitrailleuse in the nacelle

1910 : Hugo Junkers patents "thick wing, all-metal type" aeroplane.

### 1910 : Germany : Patent request for an aeroplane mounted machine gun

Anthony Fokker files a patent application for a "Device that allows a fixed machine gun to be fired from an airplane".

1911 : Minister for the British Imperial Navy [Winston Churchill] argues *for the development of military aircraft*.

October 1910 : British Imperial Army "Central Flying School" opens.

October 1910 : Coandă-1910 - Romanian inventor Henri Coandă exhibits first aircraft powered by a "turbo-propulseur".  
at the International Aeronautic Salon, Paris France.

1910 : Owen McDowall of Owen Sound, Ont. visits France and England, Inspired to construct an airplane (completed 1915)

27 October 1910 : International Aviation Tournament at Belmont Park race track in Elmont, New York.

17 November 1910 : Ralph Greenley Johnstone - Wright exhibition team, first American pilot killed, Denver, Colorado after failing to recover from a dive.

10-16 December 1910 : Coandă reported as being test flown at Issy-les-Moulineaux near Paris.

18 December 1910 : Mr. Sopwith flies to Belgium.

T.O.M Sopwith takes off in his E.N.V powered Howard-Wright biplane from Eastchurch, circles to 1000 feet and heads for Dover. 30 minutes after taking off, he passes Dover and heads for France, crossing the French coast west of Cape Grisnez 22 minutes later. With an intended final destination of le Camp de Chalons, Mr. Sopwith intends to follow his compass, but it swings erratically and he disappears into the clouds [where he encounters turbulence which bounces him out of his seat and onto the wing]. Ultimately he crosses the Belgian border and finally lands at Thirrmont, 169 miles from Eastchurch on his 1st ever cross-country flight [having used 1/2 of his fuel supply] which wins him the 4,000 pound prize offered by Baron de Forest.<sup>36</sup>

22 December 1910 : Flight into FOG results in death of pilot.

Mr. Cecil Grace takes off in his Short-Farman from Swingate Downs and flies thru mist to Les Baraques, France. Wanting to get home to Dover thru the thickening mist -fog, Mr. Grace heads to the harbour where he meets with the captain of the steamship Pas de Calais to use the ships' smoke as a guide. The ship departs later than expected and Mr. Grace departs Les Baraques at the time he planned, but without his guide. The only trace ever found of Mr. Grace is his cap and goggles, which wash up on the beach at Mariakerke, Belgium 21 days later. Mr. grace becomes the 2nd British aviator killed in an aeroplane accident and the first pilot known to die by flying into fog.

28 December 1910 :

"Antoinette" monoplane collapses in midair over Issy-Les-Molineaux shortly after take off.

The French aviator Alexandre Laffont and Spanish passenger Mario Pola are killed in their attempt to fly to Belgium.

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<sup>36</sup> History of British Aviation Vol. 1 pg 73 - R. Dallas Brett.

# Notes on "Civil Aviation"

Aeroplane data - 1910							
Builder - Designer	Model	Type	Config.	Engine	Hp	Notes	Flown by
	Antoinette	Monoplane	Tractor	Antoinette			Thomas
A.S.L - Barber	Valkyrie Racer	Monoplane	Canard	Gnome	50	A.S.L = Aeronautical Syndicate Ltd.	Barber
Avis		Monoplane	Tractor	J.A.P			1. Wickham 2. Spottiswoode
Bleriot		Monoplane	Tractor	Gnome			1. Prior 2. Butler 3. Mamet 4. P. DeLesseps
"	Racer	Monoplane	Tractor	Gnome		Clipped wing variant of	
"	Racer	Monoplane	Tractor	Gnome		Clipped wing variant w/ 14 cyl. Gnome	1. Grahame-White
Bristol		Biplane					1. B. Dickson 2. Loraine
Bristol - Wright						Wright "Flyer" built under license by The Bristol Aeroplane Co.	
Farman	Std	Biplane					1. Grahame-White 2. L. Gibbs 3. B. Dickson
"	Racing	Biplane				Clipped wing version	
Hanriot		Monoplane	Tractor	E.N.V			Davis
Howard - Wright		Biplane	Pusher	E.N.V			T. Sopwith
Neal	VII	Biplane		Green		twin rudders betwn. wingtips	1. Neal 2. Rippen
Voisin		Biplane	Pusher			2 seat	
Wright		Biplane	Pusher				
"	Racer	Biplane	Pusher			Clipped wing variant	
NOTES	1	E.N.V engines are designed and built in England					

## Notes on "Civil Aviation"

1910 : British Admiralty : the 1910 edition of "The Steam Manual<sup>37</sup> for H.M Fleet" issued per Article 923<sup>38</sup> of the KR&O for the Royal Navy. Engineers of the Fleet are trained by the R.E and attached to ships of the R.N for the supervision of the ship and the ship's machinery. The instructions for the Engineers, identified by "Article" number are contained within the "Steam Manual" will subsequently also apply to the Engineers serving in the Royal Navy's "Air Service". The manual remains virtually unchanged at the outbreak of War in 1914.

Some of The Steam Manual Articles which may bear relevance upon Royal Navy Aviation Engineering :-

### Article 3 - Distribution of the Steam Manual to officers

#### 1. Each

- A. Commanding Officer on being first appointed to command,
- B. Engineer Officer and each Midshipman on first appointment, and
- C. each Engine Room Artificer and Mechanician on being rated as such,

is to be provided with a copy of the Steam Manual.

This copy is to be considered as the personal property of the Officer, Artificer or Mechanician to whom supplied, and is to be the only one supplied to him except when replaced by a revised edition or \when his copy has been worn out.

The supply of these Manuals to Engineer Officers, Engine Room Artificers and Mechanicians is to be made by the Engineer Rear-Admiral on the Staff of the Commander-in-Chief at the Home Ports. The books will be issued to him through the accounts of the Secretary to the Commander-in Chief, to whom he will furnish a receipt for the total number of Manuals received. Supply in lieu of a copy worn out may be made on the approval of the Senior Naval Officer.

**2. Engineer Officers are to insert in their copies on the pages provided for the purpose, such particulars of the Machinery, or other information connected with the ships to which they are attached as they may think will be of future service to themselves.**

### Article 4 Distribution of the Steam Manual to vessels

1. A copy of the Steam Manual is to be provided for every Steam Vessel in His Majesty's Navy, which is to be marked with the vessel's name. In the case of new ships it is to be issued to the ship on the first appointment of the Engineer Officer.

2. It is intended that the Ship's Manual shall contain such *particulars of the Engines* and Boilers, &c, as to *type, construction, age, makers, power, the dimensions of its more important parts, the results of trials and tests, particulars of any additions or alterations made, and its state and condition from time to time, so that, in the event of an Officer being appointed to a ship already in commission, he may be able, by its aid, to make himself acquainted with the nature of the Machinery placed in his charge.* The Engineer Officer is to arrange for the insertion of such particulars on the pages provided for the purpose.

3. The Ship's Manual is to be readily accessible to all the Engineer Officers who may be attached to the ship.

### Article 5 - Definition of the Term "Engineer Officer"

Throughout the Manual, unless there is something in the context or subject matter inconsistent therewith, the term "Engineer Officer" shall mean :-

- A. *the Officer, or*
- B. *the Senior Engine Room "Artificer" (Artisan-Officer, i.e the Trades' Foreman), in charge of the Machinery, whatever his rank or rating may be.*

### CIRCULARS.

#### Article 9.

A copy of all Circular Letters, Admiralty Weekly Orders, Store Memoranda, &c, which may be issued, relating to the duties of Engineer Officers, or which in any way affect the Engine Room Department, is to be inserted in a Guard Book, D 475b, and all Engineer Officers are to quote in their own copies of the Steam Manual the number, date and subject on the pages provided for that purpose.

#### Article 10.

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<sup>37</sup> The Steam Manual for H.M Fleet, containing the "Regulations and Instructions" relating to the Machinery of H.M. Fleet, C.N 28766/10

<sup>38</sup> "Art. 923. In addition to the instructions contained herein all Officers are to be guided in the use and management of the Machinery and Boilers by the further regulations and instructions given in the ' Steam Manual,' which is furnished for their information and guidance so far as they may concern the Machinery and Boilers fitted to their ships."

## Notes on "Civil Aviation"

The Commanding Officer of every ship on commissioning will be supplied from the Commander-in-Chief's Office with a set of Admiralty circular letters, Admiralty Weekly Orders, Store Memoranda, &c, to the Fleet, and with the proper addenda and errata to the King's Regulations and other books of reference and instruction in accordance with the procedure indicated in Admiralty Weekly Order No. 89 of 18 February 1910.

### Article 11.

1. To facilitate reference, and to prevent the Circulars, &c. from being overlooked, notes should be made in the Manual, opposite the Articles that these are intended to modify or extend, calling attention to them.
2. If the Circular should not be intended as a modification or extension of any particular Article, but as an addition to the Instructions, a note referring to the Circular should be made at the end of the Manual.

### Article 12.

The Engineer Officers borne for staff duties at the Ports and in the various Fleets and Flotillas will ascertain that the Steam Manuals are in the possession of each of the Engineer Officers, Engine Room Artificers, and Mechanics, and that they, as well as the Ship's Manuals, are kept duly posted up in accordance with the directions for the same.

## DUTIES AND RESPONSIBILITIES OF THE ENGINEER OFFICERS OF H.M. SHIPS.

### Article 15.

1. The Engineer Officer is to have charge, and be responsible for the maintenance in a state of efficient working order, and, as far as may be, of readiness for immediate use, all that is placed under his charge, including :-

- (a) The main machinery and boilers of the ship.
- (b) The machinery and boilers of boats attached to the ship.
- (c) All auxiliary machinery and lifts, including motors, in the main machinery compartments, except as regards the electrical efficiency and repair of dynamos.
- (d) The following auxiliary machinery, however driven :-

Workshop engine and shafting.

All evaporating and distilling machinery.

All pumps, except lift pumps, and all pipes, cocks, and valves in connexion.

Hydraulic pumping engines up to the discharge valves on the pumps.

Hydraulic tanks.

Air-compressing machinery up to the discharge valve on the separator column.

Refrigerating, ice-making, and magazine cooling machinery.

All ventilating and forced-draught fans in connexion with the main machinery compartments.

All electric motors fitted for driving any of the above if situated in the engine or boiler rooms,

- (e) The following auxiliary machinery when not electrically driven :—

Electric generating machinery as far as the dynamo couplings.

Steering engines and gear as far as the rudder.

Capstan engines, shafting and spindles of capstans and windlasses.

Boat hoists and coal hoists.

Ventilating fans not in connexion with the main machinery compartments.

Any other steam, oil, or gas driven machinery and any other

hydraulic machinery except that detailed in clause 3.

- (f) All ventilating trunks, pipes and valves in connexion with the ventilating system.

- (g) All pipes, cocks, and valves in connexion with the pumping, draining, and flooding systems.

- (h) Temperley transporters, and all tools and apparatus on charge in store accounts and fixture list.

- (i) All watertight doors and their gear, whether vertical or horizontal, hinged or sliding ; armoured hatches with the Weston purchases or other lifting gear.

- (j) Instruments and gear, not electrical, for telegraphing signals in connexion with the machinery. Stoking indicators.

- (k) All double bottoms, wing spaces, coal bunkers, bilge compartments, bilges, and all spaces containing machinery which is solely or partly in his charge, as regards cleanliness and preservation. The Carpenter is, however, to be responsible as regards structural defects in these parts. (See Articles 331-353.)

- (l) All steel wire rope (other than derrick purchases) forming part of or directly in connexion with any machine placed in his charge.

- (m) Boilers of steam cookers.

- (n) Steam heating arrangements, with the pipes, cocks, and valves in connexion.

- (o) All spare gear, &c, of any of the above.

## Notes on "Civil Aviation"

2. All dynamos, torpedoes, submerged discharge tubes, and gear in connexion with them, and all electrically driven machinery, except that mentioned in clause 1, paragraphs a to d, and clause 3, with shafts, gearing, spare gear, &c, will be in charge of the Torpedo Lieutenant.
3. The gun mountings and all machinery for loading and working the guns, for supplying ammunition, and for turning turrets, barbettes, platforms, &c, together with the pipes, cocks, valves, and spare gear in connexion with them, except when steam, oil, or gas driven, will be in charge of the Gunnery Lieutenant.
4. In ships in which only one officer of the rank of Lieutenant is borne for Gunnery or Torpedo duties ; he is to be responsible for the whole of the Gunnery and Torpedo gear referred to at Clauses 2 and 3. When no Torpedo or Gunnery Lieutenant is borne, the Engineer Officer of the ship will be in charge of the machinery referred to.
5. Any mechanical repairs to machinery in charge of the Torpedo or Gunnery Officer, and beyond the capacity of their respective staffs, are to be taken in hand by the Engineer Officer. Similarly, any repairs to motors, &c, in charge of the Engineer Officer, and beyond the capacity of his staff, are to be taken in hand by the Torpedo Lieutenant.
6. In a Torpedo Boat Destroyer, or Torpedo Boat, the Engineer Officer is, in addition to the above, to have the responsible charge of the whole of the hull equipment.

### NEW MACHINERY AND MACHINERY OF SHIPS UNDERGOING EXTENSIVE REPAIRS.

#### ARTICLE 18.

1. Specification of New Machinery.—The Engineer Officer appointed to watch the construction of new machinery of any ship will be furnished with a copy of the specification. He is to call the attention of the Chief Engineer of the Dockyard (in case of Dockyard-built ships), or the Engineer Overseer (in case of Contract-built ships), ***to any instance in which he may be of opinion that its terms are not being complied with.***
2. A copy of the specification is also to be supplied to the Engineer Rear- Admiral on the staff of the Commander-in-Chief at the port to which the ship will be attached.

#### Article 19.

1. Weights of Machinery. D. 350.—The Chief Engineer of the Dockyard or the Engineer Overseer appointed to watch the machinery of a ship in process of construction, or the placing on board of new machinery, is to record in a book provided for that purpose the weights of the different parts of the machinery, classified in accordance with the instructions contained therein, noting also, as far as practicable, the material of which each part is constructed.
2. Record of Spare Gear.—He is to be particular in ***noting in the Book of Weights where each article of spare gear is stowed, for the purpose of facilitating any calculations which may be required in reference to the distribution of the weights in the ship.***
3. Book of Weights.—On the completion of the book, he is to forward a duplicate copy of it to the Engineer Rear-Admiral on the staff of the Commander-in-Chief at the port to which the ship is attached, for notation, who will forward it to the Engineer Officer of the ship to retain. The original is to be forwarded by the Engineer Overseer, or the Chief Engineer of the Dockyard, to the Controller of the Navy.
4. Stationery.—***Engineer Officers employed in watching the construction or fixing the engines, or in taking weights of machinery, are, on appointment,*** to forward a demand to the Admiralty on Form D. 2e, for the stationery estimated to be required to the 31st March or 30th September following. Subsequent supplies are to be demanded half-yearly on the 1st February and 1st August for the six months April to September and October to March respectively.

### NEW MACHINERY AND MACHINERY OF SHIPS

5. Engineer Overseers other than those referred to in the following clause, will be supplied by the Naval Store Officer, R.N. Store Depot, West India Docks, on demand, with such forms and envelopes on the Established List as may be considered necessary. Demands should be prepared on Form D. 397, in duplicate, and should be transmitted not oftener than once a quarter (1st January, 1st April, 1st July, 1st October).
6. Officers engaged at Contractors' Works in the vicinity of Portsmouth and Devonport are to draw their supplies of forms from those Yards, and demands should be transmitted to the Naval Store Officers on the dates specified in the previous clause.

#### Article 20.

1. Engineer Officer to be provided with tracings.—The Engineer Officer appointed to a ship receiving new machinery will be provided by the makers of machinery with tracings showing the details of engines, boilers, auxiliary machinery, general pipe arrangements, &c. If the vessel is fitted with water-tube boilers of the small tube type, he will be supplied with sketches showing the lettering and numbering of the tubes and a guard book for the Tube History Sheets.
2. Sketch Book. Explanations to accompany Sketches.—He will also be furnished with a book in which he is to make sketches (in ink, to scale and with dimensions) of such parts of the machinery, &c, of which tracings or prints are not supplied by the

## Notes on "Civil Aviation"

Contractors or Dockyard, especially of those parts which will be difficult of access when the machinery is complete and the ship ready for sea. The sketches should be as accurate and complete as possible, and should be accompanied by explanatory descriptions and remarks. Each sketch should be signed and dated by the officer who makes it.

3. Measurement Book. D. 280.—Measurement books will also be supplied to Engineer Officers to enable them to make the necessary rough sketches before drawing them to scale in the sketch-book.

### Article 21.

1. Information, &c, supplied by Shipbuilders.—Information and drawings respecting the watertight doors, the positions of the pumps and valves, the leads of the suction and delivery pipes, and the different compartments of the double bottoms will be supplied to the Engineer Officer by the Shipbuilders.

2. Information given before Ship is Commissioned.—The drawings of pipes, &c, will not be supplied until the work is actually completed, but in order that the Engineer Officers appointed to ships in course of construction may be as fully informed as possible, they will be allowed reasonable access to the working drawings of those parts of the structure and fittings of the ship that will come under their charge when the ship is in commission.

### Article 22.

1. To point out Alterations desirable.—The Engineer Officer of any ship building or undergoing repairs is to call the attention of the Chief Engineer of the Dockyard or Engineer Overseer (as the case may be) to any alterations or additions which he may be of opinion would be for the benefit of the Service, and to any instances in which he may consider that improper or insufficient fittings are being made in the ship.

When considered of sufficient importance, such representations are to be made in writing.

2. Suggestions before Work is too far Advanced.—Submissions of this nature should be made, if possible, before the work on the parts proposed to be altered has been taken in hand; but the submissions are not to be withheld even when the part proposed to be altered has been completed.

3. Notations in Sketch Book and Ship's Manual.—Should any changes be made in the machinery whilst a ship is undergoing repairs, explanatory sketches are to be inserted in the Sketch Book, and a notification of all such changes is to be made in the ship's Steam Manual. (See Arts. 4, 68.)

### Article 23.

1. **To inspect Machinery, &c, when joining Ship.**—An Engineer Officer appointed in charge of the machinery of a ship which is in charge of the Captain of the Dockyard is immediately after joining to make a careful inspection of all the machinery, boilers, parts of the ship, fittings, and stores under his care, and to report in writing to the Chief Engineer of the Dockyard and the Captain of the Dockyard the result of his examination.

2. **Responsibility.**—He will be responsible to the same extent as if the ship were in commission for the preservation in a state of efficiency of all that is placed under his charge, as laid down in Art. 15. Vide Art. 414.

3. **Custody of Fixtures and Sea Stores.**—He is to have the custody of, and be accountable for all fixtures, and stores on board which would be in his charge if the ship were placed in commission.

4. **Responsibility on raising Steam. To sleep on Board.**—He is responsible that on raising steam for any purpose all the precautions directed to be observed in raising steam for steam trials are strictly carried out, and on the night of the day on which the fires have been alight he is to sleep on board, provided the main engines have been worked, and sea connections opened, retaining with him a sufficient number of Engineer Officers, Engine-room artificers, and stokers to assist in case of fire or accident.

5. **Fire Regulations.**—He is to pay particular attention to the fire regulations and precautions, and is to be responsible for the prevention of danger from fire and lights in the engine-room department, and to allow no accumulation of clothes, oily wipings, or other matter liable to spontaneous ignition.

6. **To report Fire in Writing.**—He is, in any case where fire may occur, to report full particulars of the same in writing.

### Article 24.

1. Responsibility when in Hands of Dockyard or Contractors.—Should the machinery of the ship to which an Engineer Officer is appointed be in the hands of the Dockyard or of Contractors, *he is to keep a strict watch over all parts which would be in his charge were the ship in commission, in order to see that all necessary steps are taken for their preservation in proper condition. If in his opinion any part is liable to deteriorate from want of proper care or other cause, he is immediately to report the circumstance to the Chief Engineer of the Dockyard or Engineer Overseer (as the case may be) who will take such steps as the particular case may require, but he is not in any way to interfere with Dockyard or Contractors' workmen.*

2. **Idleness or Bad Workmanship.**—*He is to take steps to keep himself informed as to, and to report any cases of idleness, bad workmanship, or irregularity of conduct on the part of these men.*

## Notes on "Civil Aviation"

3. To watch Progress of Work.—*He is personally, or by his assistants, to watch the progress of the work (whether performed by the Dockyard or by Contractors) from its commencement in the morning to its cessation in the evening.*

4. *He is to keep an Engine Room Register in which a record is to be made of the progress of construction or repair of the machinery and boilers and of all examinations and tests of same.*

### UNDERGOING EXTENSIVE REPAIRS. 11

28.

1. Spare Gear. — The Engineer Officer is to satisfy himself that every article of spare gear has been properly fitted and tried in place.

2. Stowage of Spare Gear. — He will, when the machinery is being placed on board, at all times acquaint the Chief Engineer of the Dockyard or the Engineer Overseer (as the case may be), when the more important articles of spare gear are about to be stowed, so as to ensure their being, as far as practicable, secured in positions under protection from which they may be most readily brought into use if required, without disturbing other parts of the machinery or interfering with the structure of the ship.

3. Notation in Steam Manual. — Whenever it may be necessary to stow portions of the spare gear in places from which they cannot be brought into use without disturbing parts of the structure, the Engineer Officer is to make himself acquainted with the best methods of removing and replacing the same should occasion require ; particulars as to where stowed and method of removing or replacing to be inserted in the ship's Steam Manual.

Article 31.

1. Colours of Pipes. — *In order that the different pipes may be known by their colours, each pipe, or its casing, is always to be painted the colour that is shown for it on the authorised diagram.*

2. *The same colours will be used to show these pipes on the drawings which are supplied by the Dockyards for the information of the Officers.*

3. *Copies of the diagram will be supplied by the Dockyards, and are to be posted in convenient positions on board His Majesty's ships.*

### NEW MACHINERY AND MACHINERY OF SHIPS

33.

1. Examination of Under-water Fittings. — *In the case of a new ship built at a Dockyard, or of a ship undergoing extensive repairs there, the Dockyard Officers are, before the ship is launched or undocked, to ascertain by careful examination that all valves, gratings, pipes passing through the bottom, and other fittings below the waterline are well and properly constructed and fitted, in efficient working order and likely to remain so, and that all orifices through the ship's bottom are clear. If the Examining Officers have any doubts as to the durability of these fittings, new ones are to be substituted.*

2. The Examining Officers are to report the result of every such examination to the Principal Officer of their Department, and sign a certificate thereof, which will be kept in the office of the Chief Constructor.

3. In the case of a new ship built at Contractors' works, the above examination is to be carried out by the Hull and Engineer Overseers of the ship, in conjunction with the Contractors.

35.

1. To report Docking. M.S. — When a *ship in Dockyard hands* is placed in dock *the Engineer Officer is to report the fact to the Chief Engineer* of the Dockyard, *stating whether the machinery has been affected in any way by the process of docking.*

36.



## Notes on "Civil Aviation"

1. Examination of New Machinery. — As soon as the whole of the Contractor's trials in any ship, whether built by Dockyard or Contractors, are completed, *and the Officers, under whose supervision and observation such trials have taken place (see Art. 385), are satisfied that the requisite indicated horse-power has been developed, and that the machinery has otherwise worked satisfactorily and is completed, so far as the trials can shew,* according to the terms of contract, *the Contractors will at once prepare the whole of the machinery for examination, as detailed in the Machinery Specification, to enable the Examining Officers, acting on behalf of the Admiralty, to report on the state and condition of every part thereof externally and internally.*

2. Examining Officers. — The examination is to be made by the Engineer Rear-Admiral on the staff of the Commander-in-Chief at the port to which the ship will be attached or an officer deputed by him, and the Engineer Officer of the ship, assisted by the officers and men of the nucleus crew.

### UNDERGOING EXTENSIVE REPAIRS. 13

3. Arrangements for Examination. — *Should the machinery be too extensive to permit of the entire opening up at one time, the various parts are to be opened up as may be most convenient, and the Contractors will from time to time inform the Examining Officers what other portions are ready for examination, giving a day's notice in each case in order that they may be able to attend.*

4. Nature of the Examination. Specification to be read over.— The Examining Officers are to satisfy themselves :-

- A. that the machinery is in every part perfectly sound and in good condition ;
- B. that no fractures or flaws exist in any part whatever ;
- C. that the engines and boilers, with all their connections and accessories, are properly finished in accordance with the specification and the contract ; and
- D. that the machinery generally is in all respects fit and suitable for the Service.

Further, prior to the acceptance of the machinery, the specification is to be read over, article by article, in the presence of :-

- A. the Chief Engineer of the Dockyard or his representative, or of the Engineer Overseer (as the case may be),
- B. the Contractors' Agent,
- C. the Engineer Officer of the ship, and
- D. the Engineer Rear-Admiral, or an Officer deputed by him,

when all details, as to fittings, &c, are to be considered, to see whether they are in accordance with the specification.

5. If Machinery is defective. — If, on examination, any parts are found to be defective, or not in accordance with the contract, the Contractors are to be called upon to make all such defects good, and to leave everything complete to the satisfaction of the Examining Officers, and until this has been done the machinery is to remain in the hands of the Contractors, unless otherwise ordered.

6. Report to be made. — Anything found unsatisfactory is to be at once reported to the Superintendent for the information of the Controller of the Navy.

7. Report of Examination. — A report of the examination, signed by each of the Examining Officers, stating that the machinery and fittings are complete, fit for the Service, and in accordance with the terms of the contract is to be made to the Superintendent for transmission to the Controller of the Navy.

37.

Replacing of Parts after Examination. Completion Trial.- — As soon as the examination is completed, and the whole of the parts which have been opened up have been replaced by the Contractors under the personal observation and to the satisfaction of the Engineer Officer of the ship, a trial under-way is to be satisfactorily carried out to ensure that all adjustments are correctly made, all parts properly connected and joints tight. Any defects developed on this trial are to be made good by Contractors before acceptance.

38.

Examination after thorough Repair Trial. — After a thorough repair trial has been satisfactorily completed, whether subsequent to repair by Contractors or by the Dockyard, the procedure as laid down in Art. 36 is to be carried out, with the exception that only

## Notes on "Civil Aviation"

such parts of the machinery are to be opened up for examination as may be considered necessary by the Examining Officers to determine the efficiency of the repairs.

39.

1. Watch and Station Bill. — Before a new ship is commissioned a "Watch and Station Bill" for sea and harbour routine is to be prepared by the Engineer Officer, and approved by the Engineer Rear-Admiral on the staff of the Commander-in-Chief at the port ; this preparatory Station Bill serving *for the information and guidance of the Officers* when the ship is put in commission.

2. Book of Questions. D. 554. — The Engineer Officer is to insert the necessary answers in the Book of Questions for his department, and to deliver this book, and also the Engine Room Register directed to be kept by Art. 24, cl. 4, duly signed and completed, to the Engineer Rear-Admiral at least a week before the probable date of the ship's commissioning. These books will, after examination be returned to the ship for future reference.

### "CERTIFICATES OF ACQUAINTANCE" WITH THE STRUCTURE OF THE SHIP.

45.

1. Certificate of Acquaintance. Form S. 451. — Before a ship is commissioned for service in the Home Fleet with a nucleus crew the Engineer Officer, the Second Engineer Officer, and such other of the Engineer Officers as the Admiralty may direct, are to be examined touching their acquaintance with the details of the ship by the Engineer Rear-Admiral or Engineer Captain at the port to which the ship is attached. They must obtain certificates that they are conversant with the structure of the ship under the engines and boilers, the arrangement of the various valves and cocks, the working of the watertight doors, hatches, sluices, and pumps, the system of pumping, flooding, draining, and ventilating throughout the hull, and with the general construction of the ship.

Sketches at Examination. — Candidates are to produce at the examination sketches and drawings made by themselves of all the more important fittings, valves, sluices, doors, &c, in the preparation of which they are to be allowed access to the specifications and drawings of Contractors, and to such drawings in the offices of the Chief Constructor and Chief Engineer of the Dockyard as may be necessary.

2. H subsequently appointed, these Officers are to be examined by the Engineer Captain attached to the Fleet to which the ship belongs, or in fleets where no Engineer Captain is borne, by the Engineer Officer of the Flagship, and in the case of the 1st and 2nd Destroyer Flotillas of the Home Fleet, by the Engineer Commander of the Flotilla Depot ship. In these cases the examination should be applied for within three months of the Officer joining the ship.

3. Duplicate Certificate. — The Certificates are in all cases to be in duplicate, one copy being for the candidate and the other being retained by the Commander-in-Chief for local record.

### MACHINERY OF SHIPS IN COMMISSION.

51.

1. Engineer Officer on Appointment to examine Machinery. — When the Engineer Officer in charge of the machinery is relieved, his successor is, in conjunction with a competent Engineer Officer detailed for the purpose by the Commander-in-Chief or Senior Officer present, to examine the machinery, &c, specified in Art. 15, for the preservation and efficiency of which he is responsible either solely or partly with other officers.

2. Engineer Officer to assist with Examination. — Unless the exigencies of the Service will not permit, the Engineer Officer (Staff) is to survey the machinery in conjunction with the new Engineer Officer.

Should the exigencies of the service be such as to prevent the Engineer Officer (Staff), or where no such Officer is borne, the Engineer Officer of the Senior Officer's ship, from carrying out this duty, reasons for such departure are to be stated on the report (Form S. 354).

## Notes on "Civil Aviation"

3. Accuracy of Report. — This examination is to be carried out in such a manner that the results recorded on Form S. 354 can be accepted as an accurate statement of the actual conditions of the parts examined. All facilities consistent with the service on which the ship is employed should be afforded the Surveying Officers to ensure this.

4. Report of Examination. Form S. 354. — After the examination the Surveying Officers are to make a joint report on the Established Form (S. 354) to the Captain of the ship in triplicate, who will cause the triplicate to be attached to the Engine Room Register for the current quarter. The original and duplicate to be sent to the Commander-in-Chief for inspection, after which the original is to be forwarded to the Admiralty and the duplicate inserted in the Ship's Book.

5. Interim Report. — If the examination is not completed when the first Quarter's Engine Room Register is forwarded after the new Engineer Officer has taken charge of the machinery, and interim report, S. 354, is to be attached to that Register. In this report the parts which have been examined, with their state and condition, should be clearly indicated, together with a statement as to the probable date of the completion of the survey.

6. Examination deferred. — Should it be impracticable to make this examination when the Engineer Officer first joins his ship, the fact is to be reported by the Captain to the Admiralty, and the examination is to be carried out as soon afterwards as the exigencies of the Service will admit.

52.

1. Acquaintance with History of Machinery, &c. — The whole of the Engineer Officers are to use all possible diligence in making themselves thoroughly acquainted with the construction and condition of the machinery and boilers, with the nature and extent of the repairs (if any) that they have undergone, and the date of the more recent, and with such other facts as may be necessary to afford thorough knowledge of their history and capabilities.

2. Acquaintance with Watertight Doors, Valves, &c. — They must also make themselves thoroughly acquainted with the positions of and methods of working the watertight doors, and also with the positions and uses of all pumps, valves, and pipes, in connection with the bilges, and with the different compartments of the double bottoms when the ship is so constructed, so that in case of necessity there shall be nothing to prevent their immediate use.

3. Drawings to be Accessible. — All official drawings, as well as those contained in the sketch book, are always to be accessible to the Engineer Officers of the ship (Art. 20).

53.

Engineer Officer to furnish Reports. — The Engineer Officer is, through his Captain, to furnish the Engineer Rear-Admiral, Engineer Captain, or the Chief

### 16 MACHINERY OF SHIPS IN COMMISSION.

Engineer of the Dockyard with such written reports or returns as they may require relative to the state of the machinery and boilers in his charge ; and whenever these Officers visit the ship he is to afford them every facility, and all the information in his power, to enable them to carry out the duties entrusted to them.

54.

## Notes on "Civil Aviation"

1. Quarterly Inspection of Machinery. — The Engineer Captain or Engineer Commander borne for staff duties in each Fleet Squadron or Flotilla is to inspect the machinery and boilers of the ships of such Fleet or Squadron quarterly, or oftener if necessary, and is to inform the Commander-in-Chief of the result. On these inspections he is to examine the Engine-room Registers, Ship's Steam Manual, and Engineer's Store Accounts, and to report any neglect he may discover in properly recording all the information required to be inserted in the Register and Steam Manual, and any undue or excessive expenditure of stores. The date of his inspection is to be noted on the first page of the register, and signed by him.

2. Machinery of Harbour Ships in Commission. — The machinery of all ships in commission belonging to the home ports and not attached to a fleet is to be inspected once in each year by the Engineer Rear-Admiral or Engineer Captain on the staff of the Commander-in-Chief of the port. The reports are to be made on the Established Form, and forwarded as directed in Art. 51, cl. 4.

55.

1. Orders tending to Injure Machinery. E.R. Register. — Whenever any order is received which, if executed, would in the opinion of the Engineer Officer tend to injure the machinery or boilers, or cause a useless expenditure of power, he is to make a representation to this effect to the Captain, but, unless the order is countermanded after his representation, he is to execute it. Whenever this occurs, the Captain will cause the orders received and the representation made to be noted in the Engine-room Register.

2. Representations of Engineer Officer. E.R. Register. — Whenever the Engineer Officer may, in the course of his duty, make any representations or suggestions to the Captain with reference to the repairs or preservation of the machinery or boilers which the Captain either thinks unnecessary, or, if necessary, which the exigencies of the Service do not admit of being carried out immediately or at an early date, he will direct the Engineer Officer to note the particulars in the Engine-room Register.

62.

Time available for making good Defects. — On each occasion of completing a voyage the Commander Officer should ascertain from the Commander-in-Chief or Senior or Naval Officer, the time available for examining and making good defects of machinery, and acquaint the Engineer Officer so that the latter may make the necessary arrangements for completing the work, if possible, by the time the ship is next required, or for proceeding with it in such a manner as to enable him to undertake that which is the most urgent and important, whilst keeping the vessel ready for service within a given number of days' notice

63.

Weekly Return of Work. S. 163. — In all ships, except Torpedo Boat Destroyers and Torpedo Boats, weekly returns on printed forms are to be rendered to the Captain by the Engineer Officer, showing : —

(a) The number of Artificers and Mechanics borne.

(b) The number of hours they have worked during the week at their respective trades,

B 2

20 MACHINERY OF SHIPS IN COMMISSION.

- (c) A summary of the work on which they have been engaged,
- (d) Defects completed and new defects developed.

65.

When necessary to put into Port on account of Defects. — When the Engineer Officer considers it absolutely necessary to put into port on account of defects in the machinery or boilers, he is to make a written report to that effect to his Captain, stating the reasons that render such a step necessary, instead of making the requisite repairs at sea ; this report will be appended to the list of defects for the information of the Senior Officer of the port at which the ships arrives, who will transmit these documents, with any remarks he may have to offer thereon, to the Commander-in-Chief, or Senior Officer of the Station or Squadron, by whom, in special cases, they will be forwarded to the Secretary of the Admiralty.

66.

1. Defects of machinery. — When making out a list of defects, any which can be undertaken by the ship's artificers are not to be included. It is to be carefully discriminated between the items of repairs absolutely required for " seagoing and fighting efficiency" which are to be forwarded on Form S. 340, D. 275, and those desirable for other reasons which are to be forwarded on Form S. 340 B., D. 275 B. In order to avoid duplication of labour in dealing with lists of defects in H.M. ships, the Pink Lists (Form S. 340) should contain all items of work which, in the opinion of the respective Commanding Officers, cannot be deferred without loss of efficiency.

2. Parts to be included. — This list to include all such defects in any of the parts specified in Art. 15.

3. Defects and Supplementary Defect Lists. When to be forwarded.— The list of defects is to be prepared in a complete and intelligible manner, so that the requirements of the ship may be clearly understood, and a speedy decision given as to proceeding with the work.

The defect list is to be forwarded to the Dockyard to which the ship is assigned for the purposes of repair, so as to arrive there one month before the date fixed for the arrival of the ship.

In the case of any fittings requiring special preparation, all necessary details are to be sent with the defect list, and accurate and fully dimensioned sketches with templates, gauges or patterns of any parts requiring renewal should accompany the lists.

When forwarding lists of defects for which Dockyard assistance is required, a manuscript list is to be attached to the original, and duplicate copies of the lists of defects, stating in detail what further items of repairs, examinations, and other work not included on Forms S. 340 and S. 340n, are proposed to be carried out by the ship's staff during the time the vessel will be in Dockyard hands. These lists are to accompany Forms S. 340 and S. 340b, for the information of the Dockyard

## Notes on "Civil Aviation"

Officers and of the Admiralty.

Should any defects develop which cannot be undertaken by the ship's staff subsequent to the transmission of the main lists, a supplementary list is to be sent immediately after the arrival of the ship at her port.

4. When ships in commission come into the Dockyard hands to have defects made good, only such defects as have been represented by the Officers of the ship, or have been apparent to the Examining Officers, or become apparent during the opening up necessary to make good known defects, and which may be approved to be taken in hand, will be made good. No special examination will be made in search of further defects.

5. The following items of work should generally be dealt with by ship's Artificers : —

Work to be done by Ships' Artificers. — Adjustments of main and auxiliary engines. Examination of machinery and boilers. Re-seating small and medium size valves. Re-making ordinary steam and water-pipe joints. Packing glands and repairs to pipe lagging. Cleaning boilers. Renewals of protective slabs in boilers, condensers, &c. Minor repairs to furnace brickwork. Renewals of boilers. Examination and refit of underwater fittings, boiler mountings, cylinder fittings, &c. Tests of boilers, condensers, and pipes, by water pressure. Small renewals of condenser tubes, tightening ferrules, &c. Overhaul and ordinary repairs of steam-boats' machinery and the smaller auxiliary engines.

6. Form S. 134 D. — Any materials required for making good defects by the ship's artificers, which cannot be met out of the ship's stores, will be supplied from the Dockyards, a demand being made on Form S. 134 D., and a brief statement as to the nature of the defect to be made good given in the space at the foot of the Form. Such defects are not to be included in the lists forwarded on Forms S. 340, D. 275, and S. 340 B., D. 275 B.

7. In those fleets, squadrons, and flotillas of which the ordinary means of effecting repairs are supplemented by a repair ship ; as soon as defects are discovered the assistance of the repair ship is to be fully utilised in reduction of those defects which cannot be made good entirely by the ship's artificers, and for which some Dockyard assistance would otherwise be required. As much of such defects as can be conveniently done by the ship's staff are not to be undertaken by the repair ship.

67.

1. Engineer Officer to watch Progress of Work. — Whenever the ship comes into the hands of the Dockyard to have defects made good in the Engine-room department, the Engineer Officer is personally, or by his assistants, to watch the progress of such repairs, and he will be held responsible for all risks of fire arising from the presence of Dockyard workmen in his department. He is not, however, to interfere with such workmen, but he is to report to his Captain if he observes any idleness or bad workmanship on their part, or any other irregularity.

2. E.R. Register. — Full information respecting the nature of the defects and repairs should be given in the Engine-room Register with references in the Quarterly Abstract at the end of the Register.

3. Whenever the machinery and boilers of any of H.M. ships are under repair by a Dockyard or by Contractors, the Engineer Officer of the ship is to watch carefully the progress of the work in hand, and give all the assistance in his power.

## Notes on "Civil Aviation"

4. He is to consider it a part of his duty to bring to the notice of the Engineer Rear-Admiral, or Engineer Captain, anything that has been done, or omitted to be done, which would in his opinion impair the efficiency of the machinery or boilers.

5. If during the progress of the repair the Dockyard Officers or Contractors do not consider it desirable to carry out any proposal the Engineer Officer may put forward, he is to bring the circumstances of the case to the notice of the Captain of the ship, as, on the completion of the repair, he (the Engineer Officer) will be held responsible for having satisfied himself that the machinery and boilers are in all respects in good working order.

68.

1. Alterations and Additions. — Any alterations and additions in ships which experience suggests as being desirable are, in the case of a new ship, to be reported by letter through the respective Commanders-in-Chief to the Admiralty six months after the date of first commissioning. In all other ships any proposed alterations and additions are to be submitted annually, and at the same time as the lists of defects. (See Art. 66.)

2. Care is to be taken in ships that have completed one or more commissions that the lists of such proposed alterations and additions are confined to items necessary for sea-going and fighting efficiency.

3. In forwarding proposals for alterations and additions it should be stated whether it is proposed that the work involved shall be carried out by the ship's Artificers, and in such cases a demand on Form S. 134 D. for such materials as are required should be prepared and forwarded to the Dockyard, a note being placed on such demands that the materials are for effecting an alteration or addition submitted to the Admiralty, and will be required immediately Admiralty approval has been given for carrying out the work.

It is to be distinctly understood that no alteration or addition is to be taken in hand without Admiralty approval.

4. Lists of any outstanding alterations and additions which have been approved, but not yet carried out, are to be forwarded to the Dockyard at the same time as the defect list, so as to arrive there one month before the date fixed for the arrival of the ship.

5. Should any change be made in the machinery while the ship is in commission or undergoing repairs, explanatory sketches are to be inserted in the sketch book, and a notification of such changes is to be made in the ship's manual. (See Arts. 4, 20, 22.)

71.

1. The Engineer Officer is responsible at all times for the good order and cleanliness of the Engine-room department.

2. Station Bill. — He is to prepare a Station Bill showing clearly the stations and duties of each Officer and man under his control, which, after being approved by the Captain, is to be hung up in some conspicuous position in the Engine-room. (See Art. 39.)

In the disposal of the officers and men, he is to consider what are the best

arrangements possible for meeting the requirements of the ship, both before and during an action, as far as they can be anticipated. Vide Arts. 89 ; 134 ; 512, cl. 5 ; 517 and 519.

3. Allotment of Work. — He should allot the work of his department in such a manner as will best ensure its being efficiently performed by the Officers and others composing his staff, and so that each may know definitely for what he is personally responsible.

4. Watch-keeping in Engine-room. — All Engineer Officers in commissioned ships with the exception of the Engineer Officer in charge of the machinery are to be employed in watch-keeping in the Engine-room when steaming under way, except under exceptional circumstances. Officers employed on particular duties, as in the case of the Second Engineer Officer, and those employed in assisting the Engineer Officer with his clerical work, should keep at least four hours' watch per day, to ensure the watches being placed to as great an extent as possible in charge of Officers.

72.

1. Engineer Officer to visit Department. — The Engineer Officer is to visit the Engine-room department repeatedly during the day, and at any time, either by day or night, when his presence may be rendered necessary by any accident or other cause. He is always to be in the Engine-room when going into or out of harbour, or through any intricate channel, or when performing any evolution when more than ordinary care is requisite in executing with promptitude the orders given from the deck.

2. Department to be Inspected. — When not under steam the whole of the Engine-room department is to be inspected every evening by one of the Engineer Officers, who must satisfy himself that all the cocks and valves are shut or otherwise as ordered ; that there are no signs of fire, nor anything lying about that may ignite by spontaneous combustion, and there is no probability of an accident occurring in any part of the Engine-room department during the night. (See also Art. 541 et seq.)

A watch is to be kept in any stokehold in which fires have been alight, for 12 hours after the fires have been drawn or have burnt out.

73.

1. Training of Midshipmen. — The Engineer Officer will be responsible that the necessary arrangements are made for the training of the Midshipmen attached to the Engine-room Department.

2. It is primarily intended that their instruction should be effected by actual experience of the work carried on, and that they should in this manner become acquainted with the methods and practice adopted in harbour for the care and maintenance of the machinery, and acquire the necessary knowledge and experience under way to enable them, by the time they go up for examination for Sub-Lieutenant, to perform the duties of Engineer Officer of the Watch.

They should see such repair work as is going on in any part of the Department and take part in examinations of hull and machinery, advantage being taken of any opportunities that present themselves of seeing engineering operations in the Dockyards.



## Notes on "Civil Aviation"

3. They should make themselves sufficiently acquainted with the accounts kept of the receipt and expenditure of stores, and with the Engine-room Register and Defect List, to obtain an insight into the business management of the Department.

4. Each Midshipman is to keep an Engineering Note Book in which he is to insert descriptions and detailed sketches of parts of the main and auxiliary machinery, and particulars of important repairs, with the reasons necessitating them. This book is to be periodically signed and dated by the Engineer Officer, and is to be examined and valued at the preliminary examination in Engine-room duties.

74.

1. Staff conversant with their Duties.— The Engineer Officer is to take such steps as may be necessary to ensure that the Engineer Officers and all Engine-room ratings belonging to the ship are fully acquainted with their several duties, and he will at all times encourage them to perform those duties with promptitude and to the best of their abilities. He is responsible that the machinery and boilers are taken due care of, and that all examinations are conducted carefully at the specified times, and as necessary.

Engineer Sub-Lieutenants with little experience should, as far as practicable, be trained for a time in the duties of watch-keeping under Senior Officers.

2. Inexperienced Officers. — Should there be in the Engine-room Staff an Officer who is inexperienced, or who cannot be considered thoroughly competent, such Officer is not to be entrusted with the examination or repair of any important part of the machinery, or with the performance of any of the important duties of the department, except under the supervision of the Engineer Officer himself, or of an experienced Officer on whom the Engineer Officer can rely, and the Engineer Officer is to take every opportunity to instruct any such Officers in their several duties, and to use his best endeavours to make them competent.

75.

Engineer Officer to instruct Artificers. — The Engineer Officer is to instruct the Junior Engine-room Artificers in their duties, and to make such arrangements as may be necessary to enable them to become qualified, as soon as possible, to keep watch in the Engine-room or Boiler-room.

76.

1. Training of Stokers. — The Engineer Officer is to give particular attention to the training of the stokers, especially as regards the management of the fires, and to cause the Officers under him to take advantage of every opportunity for instructing the stokers how to burn the coal in the most economical manner.

79.

1. Spare Gear. — The Engineer Officer is to satisfy himself that the spare gear belonging to his department is in good condition.

2. Preservation of Spare Gear. — Such bright parts of the spare gear as are not readily accessible or are liable to get rubbed or knocked, are to be protected by being painted, or, if necessary, covered with tallowed spun yarn or other suitable material ; other parts may be bright and oiled or tallowed.

3. Examination of Spare Gear. E.R. Register. — Bright parts of the spare gear

## Notes on "Civil Aviation"

which have been painted or otherwise protected are to be cleaned for examination at least once a year. After examination they are to be made bright and again protected as before, and notes are to be made at the end of the Engine-room Register to show what parts of the spare gear have been examined, in what condition they were found, and the way in which they have been again protected from injury.

4. Spare Gear left on Shore. — Should any article of spare gear be left behind when the ship goes to sea, the Engineer Officer is to report the same to the Captain, in order that it may be reported to the Admiralty for the information of the Controller of the Navy. A notation of the circumstances is to be made on the fixture list.

5. Articles removed from the Ship. E.R. Register. — If any articles of spare gear are removed from or deposited out of the ship, the authority for the removal, the place of deposit, and the officer in whose care they remain, are to be stated in the Engine-room Register on the day of the removal, and also at the end of each Engine-room Register, until they are brought back again to the ship. On change of Home Port or Station any articles of spare gear so deposited are to be dealt with as provided by Arts. 1061 and 1788 of the King's Regulations and Admiralty Instructions.

6. Transfer of Vessel. — Whenever a vessel is transferred from one port to another or in the case of torpedo-boat destroyers, torpedo-boats, or steamboats from one ship to another, the whole of the spare gear is to accompany the vessel, with a proper list for verification.

7. List of Spare Gear. — Each vessel will be furnished by the Dockyard Officers with a complete list of spare gear belonging to it in store at the Dockyard, a separate list of machinery, &c, appropriated to classes of vessels being furnished to each vessel for which suitable. In the case of vessels attached to a flotilla, copies of such lists will also be furnished to the Base Ship.

80.

1. Care of Tools. — The Engineer Officer is to exercise constant supervision to see that the machines, tools, and other fittings supplied for the Engineers' workshop are kept in good order and thoroughly efficient.

2. Expenditure of Stores. — He is to have charge of all Engineers' stores. He is to keep the accounts of receipt, expenditure, and remains, to be responsible for the due care of them, and that they are only used for purposes for which they were issued, and to render the accounts at the stated times. (See Arts. 566 et seq.)

3. Yeomen of Stores. — A Yeoman of Stores, who will assist in the issue of the Engineers' stores and tools, will be allowed in all ships of 3500 I.H.P. N.D. and above, except Torpedo Boat Destroyers.

Report as to Fitness. — On the Engineer Officer of the ship being superseded, or on a man holding the rating of Yeoman of Stores leaving a ship, a report is to be attached to the man's certificate as to his fitness or otherwise to be employed again in that capacity. Similarly, a report is to be attached to his certificate if it is found necessary to remove him from the duty for any reason.

82.

1. Control of Engine-room Ratings. — When the ship is under steam the Officer

of the Watch in the Engine-room department, whether an Engineer Officer or a Chief Petty Officer, is to have the immediate control of the Engine-room ratings on watch, and is to exercise a general superintendence over the machinery, shafting and boilers. He will be held responsible for the efficient management and working of the whole of the machinery and boilers in use during the period of his watch.

83.

Engineer Officer of the Watch. Duties of. — The Officer of the watch in the Engine-room department is to attend very particularly to the expenditure of coal, oil, and other stores, and to see that they are not wasted ; to record in the Engine-room Register, at the specified intervals, all the information required therein relative to the working of the engines, &c. ; and he is, during the period of his watch, to be responsible for the good order of the Engine-room department and for all the duties connected therewith.

84.

1. Duties on Watch. — Should an accident of any kind occur to the machinery of a ship when under steam, or should the Officer of the watch in the Engine-room department observe, or be informed there is anything going wrong with the engines or boilers, he is immediately to make the Engineer Officer acquainted with it, and, at the same time, take such steps as he may consider necessary for the safety of the machinery.

86.

Signatures in Register. — The Engineer Officers of the watches are to certify by their initials the correctness of the particulars inserted in the Register for the time they were on watch, and each day's proceedings are to be verified by the signature of the Engineer Officer.

Instructions relative to the entries to be made in, and the method of keeping the Engine-room Register are given in the first three pages of the Register.

87.

1. Charge in W.T. Compartment.— The Officer, Chief Petty Officer, or Petty Officer in charge of the machinery in each watertight compartment is directly responsible for the efficient working and proper management of the whole of the machinery and boilers in that compartment when no Senior Officer or Petty Officer is present. Should an accident of any kind occur, or should he observe anything which he thinks is likely to cause injury to the machinery or boilers, he is immediately to acquaint the Engineer Officer of the watch, and his responsibility only ceases with the presence of a Senior Officer.

91.

1. Economical Working at Reduced Speeds. Comparison of Results. — To ensure the economical working of modern machinery, especially at reduced speeds, Engineer Officers are enjoined to study the matter in relation to the particular engines in their charge, and to compare recorded results of their performances at different powers, noting especially the rate of consumption per I H.P. over sufficiently extended periods to ensure fairly reliable results.

2. The subject of economical steaming at all powers is to be considered as of the greatest importance ; and every means that are supplied for this purpose are to be used to attain this end.

## Notes on "Civil Aviation"

3. Officers are to be guided in the care and management of turbine machinery by the Memorandum of Instructions for Turbine Machinery.

92.

1. Rate of Expansion. — The engines fitted in H.M. vessels are designed to carry out the principle of expansion to its utmost practical limits, and the valve gear of reciprocating engines should be set so as to give the degree of expansion found to produce the most economical results for the speed required. If the engines are in proper condition the use of a high rate of expansion should not affect their smooth working. The limiting rate of expansion will generally be found to have been reached when loops have been formed by the compression curve in the indicator diagram.

2. Adjustable Links. — The adjustable links fitted are intended for the regulation of the ratio of the work done in the several cylinders. The practice of obtaining equal powers in the cylinders is to be considered of only secondary importance, and the adjustable links should be set to give the most economical results for the speed required as found by trial, provided the differences in the powers developed are not excessive and do not interfere with the smooth working of the engines.

5. Economy. — Although it is of great importance to obtain the maximum economy, it should always be borne in mind that the proper preservation of the machinery is of the first importance.

100.

Turbine Clearances — It is essential for the safe working of turbine engines that the clearances at the dummy turbines should not be reduced below, and for economical working that they should not be increased above, the designed amounts. These clearances and the wear on the turbine bearings are to be frequently checked.

101.

Turbine Expansion Couplings. — Frequent examinations are to be made of the expansion couplings fitted in the shafting connecting the main and cruising turbines in order to ensure that the parts are well lubricated, and that an efficient sliding coupling is maintained.

102.

1. Turbines, Drainage of. — When under way care is to be taken that all turbine engines not in use and steam pipes connected with them are thoroughly drained.

2. Turbine Machinery ; Working and Management of. — Further detailed instructions for guidance in the care, management, and working of turbine machinery of the Parson's Marine type are contained in enclosure to A.L., C.N. 35341-1909, of 6th December 1909.

103.

Injury to Machinery. — Every precaution is to be taken to prevent injury to the machinery, particularly when in motion, from anything falling on it.

104.

Lubrication. — Mineral oil only is to be used for the lubrication of all parts of

the main and auxiliary engines which come in contact with steam or feed water, and, with steam pressures of 155 lbs. and over, heavy filtered mineral oil is to be used exclusively for this purpose.

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105.

4. Before closing up the machinery for raising steam, any mineral oil that has collected in the internal parts should as far as possible be removed, and the working surfaces cleaned.

107.

3. Attention to Lubricating System. — When under way constant attention should be paid to the lubricating system, and the temperature of the oil as it drains from the bearings should be frequently examined.

4. Examination of Oil in System. — When oil has settled in the drain tanks, settling tanks, or crank chambers, a quantity should be drawn from the bottom for examination and any oil which has become deteriorated should be removed and filtered and used for open auxiliary engines, &c. The strainers should be frequently examined and cleaned. The oil wells beneath the bearings also act as settling tanks and should be cleaned out periodically.

111.

Chocks and Ties. E.R. Register. — All chocks and ties fitted to cylinders, boilers, and other parts of machinery, to prevent them from shifting from the effects of collision, are at all times to be kept in efficient condition ; they are to be examined once in each quarter, and their condition noted in the Engine-room Register. (See Art. 219.)

Examination of Machinery. — After a vessel has steamed about 20,000 miles, the following examinations, adjustments, &c, of the machinery should be carried out in a thorough manner : —

Cylinders.- — Ascertain the condition of the walls and gauge the diameter, both in the athwartship and fore and aft directions at the middle and ends of each cylinder ; the tightness of the cylinder jackets should also be tested if it is considered necessary, and the liner bolts examined.

Pistons. — Gauge wear on metallic rings, and see that all the springs are efficient ; adjust the restraining edges of restrained rings as necessary to keep them efficient ; also note the clearances at the ends of the stroke.

Piston rods. — Test the rods for straightness and parallelism, see that the nuts are tight, that the metallic packing is in good condition, ascertain that the crosshead pins are parallel with the crank shaft, and adjust the guides as necessary.

Slide valves. — Gauge wear of liners and spring rings of all piston valves, and see that they are efficient ; adjust restrained rings if fitted ; examine the faces of the flat valves, and adjust the relief arrangements ; care should be taken not to screw up the packing, if so fitted, more than necessary to keep the rings at the back steam-tight, and to keep the valves in position ; particular care is necessary when india-rubber packing is used, owing to its

## Notes on "Civil Aviation"

liability to swell under the action of mineral oil. Check the positions of all the valves, and compare with the original settings.

Slide valve rods. — Examine nuts and check nuts by which the valves are secured to the rods ; see that the rods are parallel and the metallic packing is efficient ; and adjust the guides as necessary.

Connecting rods. — See that these rods are in line with the piston rods ; adjust brasses as necessary, keeping in view the clearance of the pistons. Particular care is required with vertical engines to prevent the crank-pin brasses from becoming slack, as any " hammering" on the centres will tend to split the pistons.

Crank and propelling shafting. Thrust Bearings. — Remove all bearing caps and examine journals ; test the conditions of alignment, making such gauges or templates as will enable this to be done with facility ; rectify any tendency to imperfect alignment which the machinery may develop in working, as imperfect alignment is a frequent cause of heated bearings ; the alignment of the crank shafts should be tested both when the engines are cold and also when under the temperature of working condition ; examine condition of thrust bearings, and see that the crank shafts are not forced forward ; see that all coupling bolts are in good condition.

The outboard portions of the propeller shafting to be examined as provided for in Arts. 242 et seq.

Eccentrics, straps, and rods. — See that the eccentrics remain an accurate fit on the shafts, and that the keys are in good condition ; gauge their diameters to ascertain if they are worn oval, and rectify any inaccuracy ; adjust the straps and rods, keeping in view the setting of the slide valves.

Link motions.- — All the pins, bushes, brasses, &c, to be examined and adjusted as necessary.

Air-pumps. — All the valves and guards to be carefully examined and renewed where necessary ; see also that the plunger packing is efficient. The clearances at the end of the stroke are also to be ascertained and corrected as necessary.

Condensers. — The condition of the tubes, and ferrules, and the tightness of the tube ends in the tube plates to be ascertained and defects remedied. (See Art. 116 et seq.)

Holding-down bolts and other fastenings, &c, to be examined to ascertain whether they are secure and efficient,

Auxiliary engines, &c. — Such auxiliary engines as could not be overhauled while the vessel was under way, and all other parts of the machinery, are to be well examined and all defects made good, so that as far as possible the engines shall be in a state of thorough efficiency.

2. Occasional Examinations. — In the cases in which vessels do not make lengthened runs, the examinations above mentioned are to be carried out as opportunities offer, but the whole of the parts enumerated should be thoroughly examined during a period of 12 months. The Engineer Officer must determine for himself, knowing the general condition of the machinery, the order in which such examination should be made, and also whether it may be necessary to examine any portion more frequently.

3. Pistons of Horizontal Engines. — The wearing down of the pistons in horizontal engines is to be carefully watched, and they are to be lined up to the central position when required ; the packing rings are also to be turned some distance round as they become worn.

4. E.R. Register. — Each of these examinations, with full information concerning the state of the parts examined, and the adjustment or repair carried out, is to be noted in the Engine-room Register.

5. While machinery is opened out for examination or repair and when closing up, every necessary precaution is to be taken to prevent anything lodging, falling into, or remaining inside or upon any part of the main and auxiliary machinery ; which would be likely to lead to obstruction or injury when the machinery is in motion. A responsible officer is on all occasions to satisfy himself that the machinery is entirely free from tools, starting screws, loose bolts and nuts, dirt, or any other obstruction before the several parts of the machinery are closed up.

120.

1. Indicators. — The Engineer Officer is to see that the Indicators are kept in an efficient state, so that, in addition to being able to ascertain the power the engines are developing, he may at any time, by means of an Indicator diagram, be able to form an opinion of the working of the internal parts of the engines.

122.

Auxiliary Machinery. E.R. Register.— The auxiliary machinery is to be examined frequently, and all examinations and repairs are to be noted in the Engine-room Register, and auxiliary engines not in use are to be turned by hand daily.

123.

Telegraphs. E.R. Register. — The condition of the instruments fitted on board for telegraphing signals in connection with the machinery is to be noted at the end of every week in the Engine-room Register.

124.

1. Steering Engines, Telegraphs, &c. Examination. E.R. Register. — The Steam Steering Engine, and its controlling gear, and all telegraphs and their shafting, including the Helm Signal Gear from the rudder head to the drum or wheel which receives the wire halyards, are to be examined personally once a week by the Engineer Officer, or competent subordinate detailed by him, and the result of this examination is to be recorded in the Engine-room Register. On all occasions before getting under way a further examination is to be made, and the Engineer Officer is to satisfy himself by personal inspection, and by actually working the steering gear and telegraphs, that these fittings are free from obstruction and in good working order, care being taken that the instructions issued with telemotor controlling gear are strictly observed. A report to this effect is to be made by the Engineer Officer to the Commanding Officer at the same time that the main engines are reported ready.

2. Inspection of Rudder. — Whenever the rudder is required to be worked by

## Notes on "Civil Aviation"

steam, the Engineer Officer is to satisfy himself, by personal inspection, or by the report of a competent subordinate detailed by him to make the inspection, that the rudder is unlocked, and the locking bolts stowed in the place provided for them when not in use, before the controlling gear of the Steering Engine is connected and steam is admitted to the engine.

3. Care when Steering Gear has been Disconnected. — Whenever the Steering Gear has been disconnected from the Steering Engine, special care is to be taken before vessels get under way, during the examination and working referred to in clause 1, to ensure that the gear and engines are properly connected, so that when the helm is placed hard over both ways the gear is well clear of the stops. For this purpose the rudder, after connection to the engine, is first to be worked by the engine before the deck gear is connected, and should be put over gradually both ways to intermediate angles, and the angles of the rudder compared in each case with the angles recorded on the indicator at the engine, to ensure that the readings agree. When the deck control gear is connected a similar procedure is to be followed.

135.

1. Internal Combustion Engines, Naked Lights, Precautions with Motor Boats. — The instructions issued by the makers of the various types of internal combustion engines are to be generally followed in their care and management.

2. When opening out the internal combustion engines, electric lamps, the connections of which are in good order and not liable to sparking, should be used if possible. No naked light is to be brought in the vicinity of the vaporisers or crank chambers until all inflammable gas has been expelled.

3. The inflammable vapour which may be formed, being heavier than air, its dispersion from tanks and closed spaces by ordinary means of ventilation is very difficult. The use of bellows or windsails will assist in expelling the vapour. In motor boats especial care is necessary.

4. The ignition circuit throughout must be carefully insulated and the electric leads properly supported. External sparking is, as far as possible, to be guarded against.

5. Fuel Tanks. — Fuel tanks and all fuel pipes and connections are to be regularly examined, and their freedom from leaks ascertained.

6. Matches. — Matches or lamps are on no account to be brought in the vicinity of the fuel tanks, or lockers.

7. Cans for containing inflammable oil, whether empty or not, must be securely closed and stowed in the locker provided. When not required to be open, the locker is to be properly closed, and is not to be used for any other purpose.

8. If fire extinguishers are supplied for motor boats they are always to be carried in the boat, and the crew instructed in their use.

9. Motor Boats, hoisting in. — The supply of oil fuel to the motor is to be shut off before the boat is hoisted in board.

138.

1. Cylinder Temperatures overheating. — The temperatures of the lubricating oil and the circulating water discharge should be frequently taken during the



## Notes on "Civil Aviation"

running of the engines. The rise of temperature of the circulating water discharge should not exceed that obtained during the trials of the engines.

2. Cylinder Jackets and Covers. — The cylinder jackets and covers are to be examined regularly, and any deposits from the circulating water removed from the surfaces.

3. In the event of the cylinders overheating internally or the circulating water having an unusual temperature, the jacketed surfaces in contact with the cooling water should be cleaned at the earliest opportunity.

140.

1. Pistons and Valves. — The pistons and valves of internal combustion engines are to be kept clean and in good condition, in order that the work of the engines, may not be impaired by leakage during compression.

2. Diagrams ; Diesel Engines. — Indicator diagrams are to be occasionally taken from internal combustion engines to ensure that they are working correctly.

3. In ships fitted with Diesel engines, the blast pressure should be maintained as low as possible consistent with obtaining the necessary power from the engine.

4. The firing in the cylinders of internal combustion engines should be observed regularly to ascertain that the oil fuel injected is correctly burnt and does not accumulate. This is particularly important in engines of the Diesel type, and can be tested by opening the indicator cocks.

152.

1. Draining of Boilers. — When any ship is fitted with new boilers, or the boilers are thoroughly repaired in a Dockyard at home or abroad, the Dockyard Officers will furnish the Engineer Officer of such ship with a drawing showing the construction of the boilers, the nature of the material, and the original and present thicknesses of the plates and stays ; and with a copy of the report of examination and drill or other tests made to ascertain the wear and waste at such time of repair, and with any other information which may be of value in connection with the boilers.

2. A copy of the report by the Dockyard Officers giving the results of their examination of the boilers, with drill or other tests, if any have been made, is to be placed in the Captain's ship's book, to which the Engineer Officer should be at liberty to refer.

344.

6. When Ship has been Strained. — If any ship has been strained, or it is believed that water has been lodging in any part of her, or there is any reason to think that the hull is defective, a thorough survey of the places likely to be affected is to be made, whether the periodical survey is due or not.

362.

1. Notice of Trials to Admiralty. D. 550. — Whenever the date of a Contractor's Commissioning, Thorough Repair, Special measured mile, Paying off or, Turning trial is fixed, application for approval is to be made to the Commander-in-Chief, or Superintendent (according to the class of trial) on Form D. 550, and notice is to be sent to the Admiralty in sufficient time for an Officer to attend the trial

should it be deemed necessary.

2. Contractors' and Measured Mile Trials should be carried out as near the load draught and trim of the vessel as practicable, unless otherwise directed.

363.

1. Responsibility for Management of Machinery, &c- — In general, the persons to be placed in charge of the engines and boilers of ships during steam trials are those who have previously had them under their care and control. Specific instructions are given in reference thereto under each class of trial. When the ship is in commission, the machinery during any trial is to be under the charge of the Engineer Officer of the ship.

2. Vigilance. — All Officers concerned in the steam trials of ships and in the management of their machinery are to exercise the strictest personal attention and vigilance to ensure that everything is maintained in proper working order.

3. The Engineer Officer of the ship should always be present during steam trials.

383.

Conditions of Trial. — Contractors' trials are to be carried out in accordance with the conditions relating to trials as defined in the machinery specifications, and subject to the general instructions for steam trials.

385.

1. Officers to Watch Proceedings of Contractors. — The Officers appointed to attend the trials are carefully to watch the proceedings of the Contractors and of their agents, and to see that nothing is done, or omitted, which (either by act or omission) would endanger the safety of the ship or the lives of those on board. (See Art. 364.)

2. The trials will be run under the supervision of the Engineer Rear-Admiral or his representative on the staff of the Commander-in-Chief of the port to which the ship is attached who will be responsible for the reports. (Arts. 372, 373.) The responsibility for the acceptance of a new Torpedo Boat Destroyer will rest with the Officer appointed to command and the representative of the Engineer Rear-Admiral at the Port.

3. A representative of the Chief Engineer of the Dockyard (in the case of Dockyard built ships), or the Engineer Overseer (in the case of Contract built ships), will attend the trials.

THOROUGH REPAIR TRIAL.

401.

When to be made. — This trial is to be made before a ship in the charge of the Admiral Superintendent of a Dockyard is commissioned, whenever the machinery has undergone a thorough repair, whether by the Dockyard or by contract, and it is to be carried out as soon as the repairs are completed, the preliminary trials have taken place, and the persons responsible for the efficiency of the repairs are satisfied that the engines and boilers are in all respects ready for a full-power trial.

THOROUGH REPAIR TRIAL

402.

Object of Trial. — The object of this trial is to ascertain whether the repairs have been efficiently performed, and if the engines and boilers are in all respects ready for service, and whether the indicated horse-power is obtained with any undue loss of efficiency. For this purpose the engines are to be linked up, and the cylinder jackets used sufficiently to obtain a satisfactory comparison with the results recorded on the original trials of the ship.

403.

1. Officers in Charge. — When the ship has been repaired at a Dockyard, the Chief Engineer of the Dockyard is to have charge of the engines and boilers during the trial.

2. When the ship has been repaired by contract, the Contractors or their agents are to be in charge. The Chief Engineer of the Dockyard or his representative, and the Engineer Officer of the ship, are to watch the trial to see if the repairs have been executed in a satisfactory manner.

3. The Engineer Rear-Admiral on the staff of the Commander-in-Chief of the port to which the ship is attached or his representative, is to attend the trial, whether the ship is repaired by contract or by Dockyard, and will be responsible for the reports (Art. 372, 373).

407.

1. Trial after Repairs at Foreign Yard. — Whenever a ship in commission is tried under way after repair at a foreign Yard, the machinery, is to remain under the charge of the Engineer Officer of the ship.

2. The Chief Engineer of the Yard, or his deputy, with as many Dockyard workmen as he may consider necessary, will attend the trial to watch whether the repairs have been effected satisfactorily.

514.

1. Safety Lamps.— No naked light, is to be used inside the coal-bunkers, or within 20 feet of any opening into the Bunkers, until it has been ascertained by means of a safety lamp, that they do not contain explosive gas, and special precautions in this respect are to be taken for a few days after coaling. In any case in which the distance of 20 feet is impracticable the distance maintained should be as great as possible.

2. The Engineer Officer is to satisfy himself personally that all Petty Officers and men of his department are specially instructed in the precautions necessary in these cases ; and in considering candidates for advancement, their knowledge of this subject is to be ascertained by examination, and noted on their passing certificates. (See also Article 351.)

525.

## Notes on "Civil Aviation"

Internal Combustion Engines. — Flash Point. — The oil supplied for internal combustion engines fitted in H.M. ships and ship's boats has a flash point of not less than 200° F. No oil of lower flash point is to be used in connection with these engines. Mineral Colza is to be used where necessary for cleaning valve spindles, &c.

### PRECAUTIONS AGAINST FIRE.

541.

1. Appliances for Extinguishing Fire. — The Engineer Officer is to pay special attention to all the appliances under his charge for extinguishing fire, and frequently to examine them personally to see that they are in a state of thorough efficiency and ready for use at a moment's notice.

547.

1. Spontaneous Ignition of Cotton Waste, &c. — Cotton waste which has been used as wipings for oil is very liable to become ignited through the heat developed by the rapid oxidation of the oil ; and it has been demonstrated by experiment that this action is not confined to drying oils, such as boiled and raw linseed, rape, &c. All the oils, except mineral, must, therefore, be considered as more or less liable to cause the spontaneous ignition of cotton waste and similar fibrous or other porous materials.

2. Greasy Wipings to be Destroyed. — Cotton waste, and other wipings saturated with oil or grease, are to be destroyed immediately after use.

548.

1. Iron Bins. — All lockers and bins, in which wipings or other combustible materials are deposited, are to be constructed of iron, in order to guard as much as possible against accident from fire.

2. Storage of Oil, Tallow, Cotton Waste, &c. — Oil, tallow, and cotton waste and other wipings are to be kept in the iron tanks supplied for the purpose, which should be placed as far from the boilers or steam pipes as convenience will permit.

### CLERICAL DUTIES.

561.

Clerical Duties. — The Engineer Officer is responsible for the correct fulfilment of the clerical duties of his department.

562.

1. Quarterly Report in E.R. Register. — The Quarterly Report of the state of the machinery at the end of the Engine-room Register is to contain all the information required in the form ; and as it is most desirable that specific information should be given of the probable time during which the efficient working of the machinery and boilers may be depended on without having recourse to a shore establishment for repairs, the word " uncertain " is on no account to be used with regard to such particulars, but the closest approximation is to be made that his knowledge will admit of. If the time be dependent on accidental circumstances, such explanation should be added as may enable the Professional Officers of the Admiralty to draw their own conclusions.

## Notes on "Civil Aviation"

2. Examinations and Defects. E.R. Register. — The dates of all examinations are to be given at the end of the Register ; and any special defect in the machinery is to be particularly noted in the spaces provided for recording defects.

563.

1. Transmission of Registers. — When the ship is under steam, the fair register is to be sent to the Captain as soon as possible after noon each day ; and at the end of every quarter it is to be forwarded to the Commander-in-Chief or Senior Officer of the Station or Squadron, for examination and transmission to the Admiralty.

2. Register not to be closed. — When a ship is paid off to be re-commissioned at once, the Register is not to be closed but transferred to the new Engineer Officer, who will continue it to the end of the current quarter and forward it as directed.

3. Rough Engine-room Register. — A rough Engine-room Register is to be kept in the- engine-room, and the necessary observations recorded in it as they are taken. In all ships having two engine-rooms separated by a watertight bulkhead two rough Engine-room Registers are to be kept when under way, one in each engine-room. One of these is to be kept by the Engineer Officer of the watch, and is to contain all the necessary particulars of the working of the engines and boilers, and the second by the watchkeeper in the other engine-room, and is to contain a record of all the required particulars that take place in that engine-room.

These Registers are to be used in compiling the fair and duplicate copies of the \* Engine-room Register, and are to be kept in the ship for a period of about three months after the date of the last entry made in them, or for any longer period if the Captain considers it necessary. For further instructions relative to the method of keeping the Engine-room Register, and the entries to be made therein, see the first three pages of the Register.

In the event of a collision with any vessel, other than one of His Majesty's Ships, the rough Engine-room Register is to be preserved until it has been ascertained that no legal proceedings will take place with respect to such collision, or until after the completion of the proceedings.

4. Duplicate Register. — The duplicate Register is to be an exact copy of the fair Register, all the information contained in the latter being inserted in the former, with the exception of the specimen sets of diagrams. The particulars of the diagrams attached to the page provided in the fair Register are to be inserted on the corresponding page in the duplicate Register.

5. Duplicate Registers to be kept. — When a ship is paid off the duplicate Engine-room Register for the commission are to be retained on board and preserved for reference during the subsequent commission.

6. The duplicate Engine-room Registers for the last commission need only be retained on board during the next commission, those for previous commissions being destroyed.

### STORES, AND STORE ACCOUNTS

569.

2. Information to be furnished by Engineer Officers. — The Engineer Officer is, in the first instance, to furnish to the Home Yard at which the ship is to be stored an estimate of the probable requirements for 12 months in cases where the allowance

is not defined or the expenditure will be irregular. If after sufficient experience it appears desirable to revise this estimate, a communication should be made on the subject to the Naval Store Officer of the Yard from which supplies are drawn. The Naval Store Officer should also be informed of any special stores subsequently introduced for use in the ship of which a 6 or ] 2 months' reserve stock should be maintained.

PARTICULARS OF MACHINERY.

575.

Particulars of the engines, boilers, and other machinery as are necessary to give a fair knowledge of their construction, age, repairs, &c, are to be noted by the Engineer Officer, under the various headings, at the end of the Manual in the Appendix.

(a) Engines. — Particulars as are required under the various headings, the horsepower, number of revolutions, &c, obtained on the contractor's trials, and on the several trials referred to in Arts. 425 et seq., any peculiarities in the construction of the engines, and any method of working that has been found most beneficial. If the engines be compound or triple expansion engines, the most efficient grades of expansion in the different cylinders for the various powers should be noted ; also the most effective pressures in the steam jackets.

(b) Boilers.— Particulars as are required under the various headings : positions of auxiliary cocks, valves, and pipes ; peculiarities of construction of fittings ; dates and nature of repairs ; best method of treatment of boilers, &c. If any sign of corrosive action has been discovered it should be noted, with the part of the boiler in which found, and the nature of the action. If the boilers have been drilled, or otherwise tested for wear and waste, the thickness of the plates, &c, at the different parts at that time should be noted.

(c) Propeller. — Particulars as are required under the various headings, and whether the pitch is uniform or increasing. The different tests of the screw, in order to determine whether or not the shaft is bound, should be noted in these pages, with dates of the test

(d) Miscellaneous. — Particulars of the different auxiliary engines in the ship ; motors in the main machinery compartments ; positions of the watertight doors ; flooding and other sea-cocks and valves ; Downton or electric bilge pumps ; leads of the suction pipes ; compartments of the double bottom, with the positions of the cocks and valves for filling and emptying them and such other information relative to these fittings as maybe necessary to give a fair knowledge of their position and uses. The compartments fitted to carry oil fuel and a reserve supply of fresh water for boiler purposes and the amounts they contain.

(e) Any other information. about the engines, boilers, or other machinery which is considered important should be noted in these pages, so that, if there be any change of the Engineer Officer, the Officer taking charge may be able to get such a preliminary knowledge of the machinery that the survey may be facilitated and be more complete.

## Notes on "Civil Aviation"

List of Circulars, &c, relative to the Engine-room Department,  
issued from

Distinguishing

Number and

Letter.

-

Date. Subject ami No. of Article affected.

## Notes on "Civil Aviation"

### CANADIAN AVIATION - 1911

January 1911 : The "Alexander Prize"

British Advisory Committee for Aeronautics report for 1910 issued. The report includes the results of the the "Alexander Prize" competition which stipulated that a British designed and British built aero-engine must produce a minimum of 35 hp for the duration of a 24 hour test. The engine which comes closest to winning the prize is the 60hp 219 pound 4 cylinder inline Green engine which developed an average 31.5 Bhp for 24 hours = 6.925 lbs/hp. The competing Wolseley and the Humber engines were unable to run the full duration.

January 1911 : The Royal Aero Club awards (the 1st and 2nd) Dirigible pilots' certificates to Capt. P.W.L Broke-Smith and Lt. C.M Waterlow

January 1911 : The Royal Balloon Factory is now home to 4 aeroplanes:

1. A Bleriot mono-plane
2. A Wright bi-plane
3. A bi-plane owned by Geoffrey deHavilland.
4. A new Henry Farman bi-plane, which is soon destroyed at Laffan's plain while being flown by Capt. Burke

10 February 1911 : Mr. Leo Walsh demonstrates his "imported" Howard-Wright for the Prime Minister of New Zealand at Papakura.

27-28 February 1911 : World's 1st "Air Mail"

A Humber bi-plane [with a Humber engine] carrying 5,000 letters is flown from the exhibition grounds at Allahabad, India to Naini by Capt. W.G. Wyndham and Mr. Pequet. The Indian Post Office cancels each letter with a special stamp "1st aerial post, U.P Exhibition, Allahabad, 1911"

1911 : United Kingdom : Col. Seely is Under-Secretary for War

01 March 1911 : The "Naval Contingent, R.E" commences training at Eastchurch.

The 1st "6 months" course of instruction [for members of the R.E detached to the Royal Navy] commences on Short's built aircraft owned by Mr. Frank McLean. The men are instructed by Mr. G.B. Cockburn.

1. Lieut. R. Gregory, R.N
2. Lieut. C.R Samson, R.N
3. Lieut. A.M Longmore, R.N
4. Lieut. G.V.W Lushington, Royal marine Artillery
5. Lieut. Gerrard, R.M.L.I, R.N

10 -12 March 1911 : A British manufactured Bristol Biplane powered with a Gnome engine is flown in Singapore by Mr. Christiaens of Belgium.

11 March 1911 : The "Olympia Aero Show"

Mr. Maurice Farman debuts his "enclosed nacelle", Renault engined, pusher bi-plane. The nacelle encloses the pilot and passenger and the aero-plane has a bi-plane tail with an "elevator" carried on an outrigger in the front of the craft. This is the first time a "Longhorn" Farman is seen, and it will become the principle training machine of the RFC until 1916.

2nd week of March 1911 : Letters marked "First Aerial post, U.P Exhibition, Allahabad, 1911" begin to arrive in England.

01 April 1911 - Henley Regatta, UK : Graham-Gilmour, the well known English aviator of the Royal Aero Club of England flies over the regatta course at Henley, during the boat races with five aviators from Hendon. This results in his suspension by the club and the chief of the london police meeting with the home secretary [Winston S. Churchill] re the danger aeroplanes present to the British Public, when flown recklessly. Douglas Graham Gilmour, Aviator Engineer born 7th. March 1885, French Aero Club pilot's licence no. 75 at Pau on 29 March 1910 His many feats included: flying over Hampton Court at a height of 200 feet contravened royal parks regulations by descending without permission among a herd of deer near Hampton Court.; flying up the Thames to Henley Regatta with his landing-wheels touching the water; dive-bombing both the Oxford and Cambridge crews during the University Boat Race until he ran out of fuel and was forced to make an emergency landing on a nearby cricket field - Two days before he had flown up the Thames at Westminster.



## Notes on "Civil Aviation"

The Club put him on trial, in the first "air court" ever held in England. The Court suspended his flying certificate for a month on account of his escapade at Henley, but decided that public safety was not endangered by his Westminster flight.; and, allegedly, flying beneath Tower Bridge in a biplane. The Royal Aero Club suspended his certificate, but this did not deter him, and he continued to fly until his untimely death killed in an aeroplane accident at Richmond, 17th. February 1912, Effects £22. collected a batch of police court summonses for speeding and driving a motor car to the danger of the public. On his first appearance at Woking the chairman of the magistrates imposed a nominal fine, but was so impressed with the charm of the young aviator that he invited him home for tea. He had amassed ten convictions, including three for dangerous driving, by March 1911, was fined again, and had his licence suspended for three months. On this occasion he had been driving rather fast from Brooklands to Brighton, keeping up with his fellow aviator Oscar Morison who was making the first ever cross-country flight to Brighton. the first aviator to fly to Portsmouth, over-fly Royal Navy warships, and demonstrate their vulnerability to air attack. He 'bombed' Fort Blockhouse, the submarine depot's headquarters, with oranges, before landing in the grounds of the Haslar Royal Naval Hospital. Accused of manslaughter in one traffic accident, Gilmour was summoned to Wiltshire assizes at the end of May 1911. News spread of his intention to fly to court and thousands of Salisburyans were on the look-out for his aircraft. He flew from Shoreham to Salisbury, circling the cathedral spire several times en route for the assizes. Although exonerated at the inquest he was later sent for trial following disclosure of driving while disqualified; he was acquitted. At Henley regatta, while racing was in progress, Gilmour flew with his wheels almost touching the water. On 7 July he followed the Thames, flying past the houses of parliament and round St Paul's Cathedral. These 'stunts' brought him into conflict with the Royal Aero Club, which had already cautioned him over the Salisbury Cathedral flight. The club suspended his pilot's licence, but since it was a French one a Court of Appeal judgment ruled against them. On 17 February 1912, in perfect flying weather, after taking off from Brooklands for a cross-country flight in the Martin-Handasyde, Gilmour's plane crashed in the Old Deer Park, Richmond. Suddenly the machine began to wobble. A moment later one, or both, wings buckled up. The airplane dived from a height of 300ft., and the nose buried itself a foot deep in the ground. Graham Gilmour was killed instantly and he died of a fractured skull, aged twenty-seven. Gilmour anticipated the possibility of dying in an air accident and in April 1911 had lodged a letter with a friend setting out his wishes, especially requesting no bell be tolled. He was buried on the 21st at Mickleham church beside his parents. He donated his Blériot to Clifton College and it was fixed to rafters in the gym. Although so well known for his enthusiasm and feats of daring flying, he was a most careful pilot, always using a safety belt. His obituary in *Flight* recorded 'he was one of those pilots whom the science and practice of heavier-than-air locomotion could little afford to lose' 39. His Brother Stanley Graham Gilmour also obtained his aviators Cert in 15.12.1914, and served in WW1—Lieut RFC—survived

01 April 1911 : 1st day of the financial year. Royal Engineer's balloon school, Farnborough is reformed as the Air Battalion. From now until 13 May 1912 ALL Army Flying is by the Officers of the R.E. The "Air Battalion" now consists of:

1. Headquarters, based at Larkhill, Salisbury Plain
2. Company No.1
3. Company No. 2

The staff of the "Air Battalion" of the R.E at Farnborough consist of:

1. One Commanding officer - Maj. Sir Alexander Bannerman, R.E
2. 13 "Other officers":
  1. Capt. Broke-Smith, R.E - Dirigible pilot
  2. Capt. J.B Fulton, R.F.A
  3. Capt. Burke, Royal Irish Regt.
  4. Capt. Maitland, Essex Regt.
  5. Capt. Carden, R.E
  6. Lieut. R.T Snowden-Smith, A.S.C
  7. Lieut. Theodore Ridge, Assistant Superintendant - Balloon Factory
  8. Lieut. R.A Cammell (R.Ae.C certificate issued 31 Dec. 1910)
3. 23 N.C.O's:
4. 153 men of the R.E :
5. 2 Buglers:

The equipment of the "Air Battalion" of the R.E consist of:

1. 4 riding horses
2. 32 draught horses
3. 5 "experimental" aeroplanes:
  1. Blériot - mono-plane

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<sup>39</sup> Oxford Dictionary of National Biography (Douglas Graham Gilmour)

## Notes on “Civil Aviation”

2. deHavilland - bi-plane
3. Farman - bi-plane
4. Paulhan - bi-plane
5. Wright - bi-plane
4. assorted “air-ships”
5. assorted “balloons”
6. assorted “Kites”

20 April 1911 : Canada Gazette :

Public Notice is given under 1st Part of Chapter 79 of the “Revised Statutes of Canada, 1906” known as “The Companies Act”:

Letters patent have been issued under the seal of the Secretary of State for Canada incorporating:

1. Georges Azaire Binet, manufacturer,
2. Napoleon Dion, accountant,
3. Ernest Charrette, hotel-keeper, and
4. Arthur Binet, assistant customs officer -

all of the City of Fraserville in the Province of Quebec, for the following purposes:

Item (J): To conclude agreements with:

1. the Dominion of Government, and
2. the Provincial Governments of Quebec, New Brunswick and Nova Scotia, and
3. with any person whatever,

to aid in making experiments and undertakings for the purpose of establishing and promoting in Canada:

1. the oyster industry,
2. **the aerial navigation**, and
3. signal stations;<sup>40</sup>

1911 : Joy-Riding Restrictions

As a result of the increase in dangerous antics by un-certified aero-plane pilots, the RAeC takes steps to protect the Public from Danger. The RAeC enacts that “Any aviator who carries passengers without having first obtained an “Aviator’s Certificate” should have the subsequent granting of said certificate postponed until the RAeC committee deems the aviator competent.

23 May - 20 June 1911 : The Imperial Conference met at the Foreign Office in London, UK.

Present at the meeting :

1. The Chairman: The Right Honourable L. Harcourt, M.P., Secretary of State for the Colonies
2. For Canada :
  1. The Right Honourable Sir Wilfred Laurier, G.C.M.G., Prime Minister of the Dominion.
  2. The Honourable L.P. Brodeur, K.C., Minister of Marine and Fisheries.
3. For Australia :
  1. The Honourable A. Fisher, Prime Minister of the Commonwealth.
  2. The Honourable E.L. Batchelor, Minister of External Affairs.
4. For New Zealand:
  1. The Right Honourable Sir Joseph G. Ward, K.C.M.G., Prime Minister.
  2. The Honourable J. G. Findlay, K.C., LL.D., Attorney- General and Colonial Secretary.
5. For Union of South Africa :
  1. General the Right Honourable L. BOTHA, Prime Minister of the Union.
  2. The Honourable Sir D.P. de Villiers-Graaf, Bart., Minister of Public Works, Posts and Telegraphs.
  3. The Honourable F. S. Malan, Minister of Education.
6. For Newfoundland :
  1. The Honourable Sir E.P. Morris, K.C., Prime Minister.
  2. The Honourable R. Watson, Colonial Secretary.

Sir W. L. - “I would view with serious apprehension the interference of any body whatever between the Home Government and the Governments of the Dominions. Sir W. L. adhered to the position he took up four years ago, that *the relations between the*

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<sup>40</sup> Chapter 79 - revised statutes of Canada - as amended by order in Council of the 9th February, 1897 - instituted an act respecting the navigation of Canadian waters.

## Notes on "Civil Aviation"

*Dominions and the Mother Country should be carried on by themselves.* The organization of the Colonial Office had given ample satisfaction, and Sir W. L thought they should leave matters as they were at present.

25 May 1911 : 3rd fatality of a British pilot.

Mr. B.G. Benson, a student pilot at the "Valkyrie School"- Hendon, is killed during his 1st gliding attempt from 200 feet when he stalls his machine vertically into the ground from 40 feet.

25 May 1911 : Imperial Council, 2nd Day :

Sir Joseph Ward <sup>41</sup> :

1. Does the Conference fully appreciate what has happened so quietly, because the relations between the Motherland and Canada have been so harmonious ?
2. Canada has, in recent years, grown into a strong nation, no longer in a state of tutelage, sheltering behind the protection of the Motherland.
3. Canada, feeling that she has passed through infancy to full manhood as a nation, has originated and made law a naval "scheme" (Programme) for the creation and maintenance of a local navy, a navy not only to be maintained and controlled by the Canadian Government, but a navy which is not to participate in an Imperial war unless Canada herself approves of that war.
4. Under the existing system, the rest of the Empire, consequently, might be at war, and the Canadian Navy withheld from it, and inactive. But I want to impress the fact that the Empire cannot be at war and Canada at peace at the same time.
5. Any war to which the statesmen of the United Kingdom commit the Empire involves Canada, as well as New Zealand, and all other portions of the Empire, and from the point of view of international law Canada is as much a part of the Empire as England.

27 May 1911 : 4th fatality of a British pilot.

Mr. Vladimir Smith is killed in St. Petersburg, Russia, by flying into the ground when he fails to pull his "Sommer" bi-plane out of a dive or steep turn.

June 1911 : Paris, France - The French War Minister is killed in an aeroplane accident.

June 1911 : With the recent death of the French War Minister, "the exploits of Grahame Gilmour and others over a boat race course" are recalled and the RAeC summons Mr. Gilmour and Mr. Melly before the committee for questioning. Gilmour a re: his flying over Salisbury and landing nearby and Mr. Melly re his alleged flying over Liverpool.

June 1911 : As a result of a meeting with the London Police Commissioner over his concern for the safety of the Coronation the Home Secretary [Winston Churchill] introduces a BILL into parliament "to prevent flying of air-craft" over the route of the Coronation procession of King George V. The Bill which is to become the "Aeronautics Act, 1911" passes thru both houses and receives Royal assent in 7 days. [breaking all records for getting legislation passed].

The new Aeronautics Act applies to the entirety of "The British Empire", including by extension, her Dominions, Territories and possessions around the world.

01 August 1911 : Mr. Gerald Napier is killed while flying his Bristol bi-plane at Brooklands.

Flying with a passenger for the 1st time, he attempts a spiral descent and is caught by a gust of wind. The aircraft side-slips into the ground and Napier is killed by the engine. His passenger is thrown clear and narrowly escapes death.

18 August 1911 : Lieut. Theodore Ridge is killed at Farnborough while attempting to fly an experimental "deHavilland" against the advice of its' designer. Lieut. Ridge stalls the aircraft in a



<sup>41</sup> Minutes of Proceedings of the Imperial Conference 25 May 1911 - Imperial Council, 2nd Day : Sir JOSEPH WArD pg 47. <https://archive.org/details/1911minutesofprooimpeuoft>

## Notes on “Civil Aviation”

gliding turn and it dove into the ground.

09 September 1911 : In a repeat of his Indian Air Mail, Capt. W.G. Wyndham [who returned to England in February] with the aid of Mr. Lewis Poole promote an “Experimental Air Mail service” from Hendon to Windsor. The Post Office assumed “No Liability” and the care of the letters is placed in the hands of the staff-pilots of the Bleriot and Grahame-White schools at Hendon. The 1st “UK Aerial Post” letters are subsequently carried by aeroplane from London to Westminster for the first time by Mr. Gustav Hamel in a Bleriot at an average speed of just over 105 mph.<sup>42</sup>

17 September 1911 : Death of Lieut. R.A Cammell, Royal Army

Detailed to take delivery of the 1st Valkyrie mono-plane for the British War Office, Lieut. Cammel, arrived at Hendon to accept the aircraft and fly it to Farnborough. Lieut. Cammel does not familiarise himself with the controls but instead takes off and begins to fly the aircraft like he flew his Bleriot [stunting recklessly] as soon as he was airborne. He then stops the engine and vol-planes in a gliding turn during which he overbanks and sideslips into the ground. The Lieut. is thrown from the wreckage [not belted in] and lands on his head, killing him instantly.

rough Statistics compiled by Automobil-Welt to the end of October 1911				
Nation	Pilot Certificates issued to date	Pilots killed in flying accidents	%	Notes
France	500	27	5.4	Numerous types flown
Germany	135			Numerous types flown
Great Britain	110	9	8.2	Numerous types flown
Russia	55			Numerous types flown
Italy	45			Numerous types flown
United States	35	12	34.3	Most Americans are flying “Wright” aircraft. 8 fatalities on Wrights. Most die during “Stunting” exhibitions which attract crowds
Total	880	48	5.5	

November 1911 : The “Future Development” of Aerial Navigation in Britain is considered.

A sub-committee of the Committee of Imperial Defence, under the chairmanship of Viscount Lord Haldane, was instructed by the English Prime Minister to:

- I. consider the future development of aerial navigation for naval and military purposes.
- II. consider the measures required to secure an efficient aerial service.

December 1911 : The Royal Navy’s “School of Flying” is established at Eastchurch

1911 and 1912 : Belgian pilot Mestach flies an “Antoinette” monoplane on exhibition flights over Quebec City QC, Sherbrooke QC and Winnipeg MB.



18 December 1911 : UK Technical Sub-Committee of Imperial Defense is formed by Lord Haldane to *examine the possibility of creating an aviation service*.

The Royal Army’s “Air Battalion” is created as a result of their recommendations. ??

CANADIAN AVIATION - 1912

THE EDINBURGH REVIEW or CRITICAL JOURNAL

"The Judge is condemned when the guilty is acquitted" - Publius Syrus

: JANUARY, 1912 ... . APRIL, 1912 LONGMANS, GREEN, AND CO.  
39 Paternoster Row, London, April 17, 1912.

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JANUARY 1912. No. 439.



In the last year of the eighteenth century a German Romantic, whose frail body was the servant of a mind endowed with insight beyond the common, wrote these words :

The practical man wholly rejects bare theory, without suspecting how problematic must be the answer to the questions :

1. whether Theory exists for the sake of Application?, or
2. whether Application exists for the sake of Theory?

It is thus that Novahs voices a thought ever present, though in different forms, to those whose task it is to-day to train and prepare our army for war.

It is just this fact which differentiates the British army of 1912 from that of the past, even the recent past, for it is not so long since the practical British soldier rejected bare theory ; war to him was all application.

That generation, the direct heirs in tail of former generations of British soldiers, has passed away, leaving the destinies of the army in the hands of the men who sat at the feet of Henderson, and learnt from that inspiring teacher that ' Li all ages the power of intellect has asserted itself in war.

It was not courage and experience only that made Hannibal, Alexander, and Caesar the greatest names of antiquity. Napoleon, Wellington, and the Archduke Charles were certainly the best educated soldiers of their time ; while Lee, Jackson, and Sherman probably knew more of war before they made it than anyone else in the United States.

But it was not until 1866 and 1870 that the preponderating influence of the trained mind was made manifest. Other wars had shown the value of an educated General, these showed the value of an educated army.' - The Science of War, p. 3.

*A noticeable feature in most discussions on military questions is that the different parties to the discussion attach to the same terms different meanings, usually leading to complete misunderstanding.*

*To avoid this it is as well to define terms as they are used.* From the alternative meanings given in the ' Concise Oxford Dictionary ' we have selected the following :

1. a Principle is : "a fundamental truth as a basis of reasoning."
2. a' Command is : "control, mastery, possession."

From these definitions it follows that "the principles of command" as regards the command in the field of an army, are "the fundamental truths" which are the bases of reasoning about "the control or mastery of an army in the field".

From this definition itself springs the first fundamental truth about command:  
"Command" implies control or mastery of an army by a commander.

From this first fundamental truth follows the corollary that *"an army is trained, organised, and employed in such a manner as to admit of control or mastery"*

## Notes on "Civil Aviation"

The second principle of command is: "that *if any body of troops* is so trained, organised, or employed *as not to admit of control or mastery*, that body of troops, whatever else it may be, most certainly is not commanded"

The command, control or mastery of a body of troops is useless unless it tends to the accomplishment of the end in view in war, being "the defeat of an enemy in battle".

Any species of command, control or mastery which conflicts with "the defeat of an enemy in battle" is bad and is to be discarded.

Hence it follows that the third principle of command is that:

The commander should:

1. have a clear idea of how he proposes to use the instrument in his hand,
2. have a clear idea of the purpose for which it was forged—the winning of battles,
3. in fact possess adequate knowledge and capacity.

in 1813 Napoleon wrote to his marshal Marmont explaining his "scheme" (Programme) of operations, and asked for Marmont's opinion.

Marmont's reply contains this sentence :

"It is to be feared that on the same day your Majesty wins a great victory, you will learn that your subordinates have lost two"

Marmont knew that his comrades in arms, with but few exceptions, *were not fit for the command of armies, however skilful they might be in handling their own corps*.

The form of war Marmont made depended for success [as in 1805 and 1806] on the skilful command of "detachments", though the detachments had grown from "detached corps" in 1805 to "detached armies" in 1813.

Napoleon, the commander, still knew what he wanted to do, but since his detachment commanders no longer played their part intelligently his army can no longer be considered controllable for the purpose in view, and, as a consequence, his mastery over his army was no longer adequate.

This meant that in Napoleon's later campaigns the first and second principles of command no longer harmonised with the third principle of command.

What is of importance, and of direct bearing on the training and employment of the British army to-day, is to examine the underlying causes of the inadequacy of Napoleon's army in 1813 and 1815 to carry out the master's conceptions.

Unquestionably the material of the army had deteriorated, the ranks were full of half-trained conscripts who were not the equal in fighting worth of the veterans of the Grande Armée.

Moltke was widely read in military history and a deep thinker on war.

He had studied the best books that had been written up to his day on the campaigns of Napoleon, and noted that:

*"one important element in the ultimate overthrow of the Emperor Napoleon was the failure of Napoleon's marshals to harmonise the principles of command owing to their neglect to provide for their army(s) "subordinate commanders" capable of intelligent co-operation when removed from the immediate control of the commander-in-chief" - Moltke*

Success in war appears to be dependent upon harmony in the principles of command.

Misconception of the natures of "doctrine" and of "tendency"

The correct definition of ' doctrine ' is ' what is taught ' or "general body of instruction"

This is the meaning which Colonel Foch attaches to his use of the word in his brilliant and illuminating book on war.

A ' tendency,' on the other hand, is ' a bent,' ' leaning,' or ' inclination.' \* Concise Oxford Dictionary, p. 244.

t Des Principes de la Guerre, p. 7. % Concise Oxford Dictionary, p. 909.

By \* doctrine ' they understand a general body of teaching, leading those who hold it to see the concrete problems of war in the light of the general body of instruction which they hold in common.



## Notes on "Civil Aviation"

Hence, given that the same problem is presented to different commanders bound together by a common doctrine, that 'particular' problem will appear to each commander under the same aspect, and consequently whatever solution that problem calls for will be the one which commends itself alike to each of those commanders.

It most emphatically does not imply that any attempt is to be made to fit one solution to two or more essentially different problems.

We must be clear, therefore, as to what is meant by a 'problem of war,' and not confuse the 'problems of war,' which are not infinite in number, with the situations which arise daily, hourly, even oftener, and may be infinite in their variety. A problem is : a doubtful or difficult question, a proposition in which something has to be done. A situation, on the other hand, is : a set of circumstances or position in which one finds oneself.'

The 'doctrine of no doctrine' follows directly from an empirical conception of war. It involves the consequence that *the training of an army is to stop short of any attempt to train the minds of commanders.*

They are to be perfected in the technique of command, but obviously any attempt to mould their mentality is to be deprecated as tending to give the mind a bent, inclination, or bias *which may prejudice it in examining*, on their own merits, the infinite variety of situations which war presents for consideration and action.

The task of ensuring unity of effort from men trained under such diverse conditions is insuperable unless their minds are guided and bent in some one definite direction by the assimilation of a common doctrine as recognised by the General Staff.

For those who have eyes to see, and who will read 'Field Service Regulations, 1909,' in conjunction with 'Infantry Training, 1911' [the latest pronouncement of the General Staff, published only in September 1911] it will be apparent that step by step, slowly but surely, the General Staff is endeavouring to guide our army along the only road which leads to unity of effort in war and harmony in the principles of command.

Field Service Regulations is imbued with the offensive spirit, yet it tempers that spirit by a wise advocacy of postponement of decisive attack until the defender has been marked down, fixed and exhausted by the action of a portion of the attacking army. pg 141 the SOVEREIGNTY OF THE AIR. -

Article no. VII — the SOVEREIGNTY OF THE AIR.

1. The Aeroplane, Past, Present, and Future. By C. Graham White and H. Harper. London : Werner Laurie. 1911.
  2. The Conquest of the Air. By Alphonsb Berget. London : W. Heinemann. 1909.
  3. Mes trois Grandes Courses. Par Andre Beaumont. Paris: Hachette. 1912.
- Army Review, for July and October 1911.  
Times, February 25, 1911.

For centuries Englishmen have been accustomed to the idea that a strong navy is a guaranty of national security and of empire.

Other nations, during the last twenty-five years, have adopted our standpoint about the sea, and our belief that commercial interests are promoted and safeguarded by spending money upon ships ; and so it has come about that in shipbuilding all the Great Powers now seem to see the secret of national pre-eminence.

The advent of the "Dreadnought" gave the nations, even those most backward in naval matters, the chance of making good their disadvantage, for the 'Dreadnought,' by outclassing and demodging [?] smaller and older ships, made it possible for every country, as it were, to start even and from approximately the same platform.

And so Power after Power announces the launch of new capital ships, and people after people groan under the burden of fresh armaments.

We Englishmen are well accustomed to look to the sea, whence our help hath come in the past, but as yet we are not well accustomed to look up for it to the skies.

*We know the value of sea-ships ; we do not as yet realise the value of air-ships.*

We do not see in aircraft *the latest safeguard of national existence* ; we see in it a new sport, a new amusement, an excuse for motoring to Brooklands, or for spending a summer's day beside the Thames..."

## Notes on "Civil Aviation"

"Some sailors say that the publication of Mahan's book 'The "Influence of Sea Power upon History"' has been greatly responsible for opening the half-shut eyes of other nations to the value of command of the sea, and that in a way it has done us more harm than any book ever published.

This we may take for what it is worth, but it leads us to wonder *what book is to be written that will open our sleepy English eyes to the vital importance of command of the air.*

Nothing is more startling in the history of human endeavour than the progress made in aviation during the last five years.

autumn 1906 : Santos Dumont enters his flying machine in the "Archdeacon Cup". To win the Archdeacon Cup one must fly 25 without touching the ground. Santos Dumont flew 80 yards at a height of 3 feet. Three weeks later Santos Dumont flew 230 yards.'

1907 : Santos Dumont's 230 yard record was beaten by Henry Farman with 311 yards at a height of 8 feet.

January 1908 : The 1st "mile thru the air" was completed

April 1908 : De laGrange, one of the pioneers of aviation, remained in the air for just over 9 minutes.

In 1911 many sensational feats were accomplished, such as:

1. a height record of 13,944 feet without a passenger and
2. a height record of 9800 feet with a passenger ;
3. a speed of 110 miles an hour without a passenger, and
4. a speed of 83 miles an hour with two passengers ;
5. a flight in a forty-mile wind,
6. a non-stop flight of 447 miles and 11 hours in the air,
7. a stopping flight of 770 miles across country in one day,
8. a flight with 13 passengers ;
9. the crossing of the Pyrenees, Apennines, and Rocky Mountains.

The aeroplane is a part of the equipment of the modern army as vital to its efficiency as motor transport and wireless telegraphy.

It is a weapon whose use we have not completely gauged, whose value we have not fully appraised.

So utterly unaccustomed are we to reckon with it in studying war that we fail to realise its possibilities, fail to realise that success or failure in war may be in this the latest weapon forged by man.' - *Captain Burke - lecture given by Captain Burke, of the British Army Air Battalion, at the United Service Institution November 1911,*

*The mechanics and assistants—the rank and file of the air corps—require a more skilled and specialised education.*

Each of the twenty army corps will have an aviation section as part of its organisation in the same way that it now has cavalry, artillery, army service corps,

M. Messimy also foreshadowed the probability of each regiment of artillery having special aviators attached to it.

The new "scheme" (Programme) of organisation will require several hundred pilots ; officers and non-commissioned officers will be eligible for this post.

The completion of the organisation depends on the rapidity with which pilots are forthcoming.

*In France, the Birds of War are no longer, as the 'Matin' so elegantly phrased it "abandoned to the Winds of Chance" but with us it is, for the present, different. And there are excellent reasons for this, for there are undoubtedly great difficulties in organising an air corps even when flyers and machines are to be had in plenty.*

For one thing it has of necessity to be *a corps of all arms, for which suitable officers must be drawn, irrespective of rank*, from both the army and navy.

*The mechanics and assistants — the rank and file of the air corps—require a more skilled and specialised education than the ordinary [Royal] Engineer private ever receives.*

In fact *the mechanic suitable to take charge of an aeroplane is the sort of man who could command a good salary outside the army.*

The question of *the internal organisation* of any air corps offers many problems, *since such different sorts of work may be demanded* of pilots and observers.

For example:



## Notes on "Civil Aviation"

1. for locating guns and directing fire, artillery officers would be needed :
2. for the important work of reconnoitring and photographing fortresses and defence works, engineer officers ;
3. for tactical and strategic reconnaissance, staff officers trained to observe the signification of the movements of troops.

How is this heterogeneous collection of arms to be welded together into a harmoniously working and efficient corps ?

The air corps, besides demanding of its officers that they should be efficient pilots, general observers, and map readers, *must also, as we see, make demands of a highly specialised nature on individual officers.*

It is small wonder that English military authorities are slow in formulating their "scheme" (Programme) of organisation, and in setting forth the objects for which aeroplanes will be required in war, but we can hardly believe that the despondent attitude of the commandant of the Air Battalion, Brevet-Major Sir Alexander Bannerman, in his two articles on Aeronautics in the Army Review, is justified.

Brevet-Major Sir Alexander Bannerman:

1. deprecates the enthusiasm for aircraft shown by those who have but superficially studied the subject of aeroplanes, from which enthusiasm he has doubtless suffered, and
2. directs our attention to the difficulties of transport and maintenance of this new arm under war conditions.
3. sees in our insular position an inherent obstacle to the use of aeroplanes, for he can point to no English frontier fortress in which aircraft can be comfortably stabled after reconnaissance.
4. assumes that in two or three years' time we may know definitely the offensive and defensive values of aeroplanes and dirigibles, and [as we understand him] he
5. considers that no ' aeroplane policy ' can really be formulated with regard to our insular army until these values are ascertained.

There is a most noticeable want of enthusiasm in these articles, but we are encouraged to hope that everything is not looking quite so despairing in the Air Battalion as it was earlier in the year.

In July the commandant expressed his fear lest it might be difficult to get a sufficient supply of military pilots in a small and voluntary army, the conscript army having so much greater a choice of material.

In October we find him gloomily stating that there will be more pilots forthcoming than possibly can be used.

As a nation we at least have the satisfaction of knowing that we have produced the second largest number of pilots in the world. Though we quite understand, as we have said, the difficulty of formulating a "scheme" (Programme) of organisation and of setting forth the objects for which aeroplanes will be required in war, we do not see any reason why the Government should have hesitated so long about the type of machine required for military use, unless it has been influenced by Sir Alexander Bannerman's pessimism.

Since the Air Battalion has been created, and since it is shortly to have 100 officers, it must have machines for them to practise on.

The French military authorities actually *formulated their demand as to the type of aeroplane they needed two years ago*, and to this demand French constructors build.

The conditions essential for French military aeroplanes in October 1911 were :

1. That the aeroplane and motor be constructed in France.
2. That each machine be able to fly 300 kilometres (187 miles) in a circle without a halt.
3. That machines should be able to carry 300 kilos of useful-weight (exclusive of petrol, oil, water, 'etc.).
4. That it must be three-seated.
5. That it must rise 500 metres in 15 minutes with full complement
6. That it should be able to fly 60 kilometres an hour (37 miles).
7. That it should be able to descend in plough, crops, meadows, stubble, and be able to get of again at once.
8. That it should be easily transportable by road or rail, and easily and quickly put together.

The prizes offered by the French Government at the Military Concours are:

1. From the competitor who has come in first:
  1. Buying of the winning machine at 4000L and

## Notes on "Civil Aviation"

2. An order for ten similar machines at 1600L. apiece.
2. From the competitor who has come in second, six machines are ordered at 1200L each.
3. From the competitor who has come in third, four machines are ordered.
4. Additional conditions as to speed obtained:
  1. a premium of 20L per kilometre on all speed over 60 kilometres,
  2. a premium of 400L for the speed of 80 kilometres
  3. Hence the successful competitor could not win less than 20,000L. and might win more.

The conditions of the British competition, and rightly so, are to be far harder than those of the recent French competition.

Any machine which emerges successfully from the British Government tests will be a great advance upon any existing aeroplane and will embody improvements which can only be the fruit of many experiments. Such experiments cost money, a great deal of money, and it seems as though the prizes offered would not admit of any but rich and well established firms competing.

Hitherto it has been through the munificence of private persons that national interest in aeronautics has been stimulated, in particular by Lord Northcliffe:

1. In 1909 Lord Northcliffe offered 2000L to any airman crossing the Channel,
2. in 1910 Lord Northcliffe offered 10,000L to any airman flying from London to Manchester, and
3. in 1911 Lord Northcliffe offered 10,000L to any airman flying the Anglo-Scottish circuit.

Thus Lord Northcliffe, a private individual, has already expended in prizes a sum double that which our Government is prepared to devote to the encouragement of aviation in England.

But since an official prize competition has at last been inaugurated, it is not without interest to note what hitherto has been the official attitude towards the aeroplane.

There is not very much to go upon, but at any rate there are the speeches of the members of the Government in charge of the War Office as well as the two articles, already alluded to, by the commandant of the Air Battalion.

February 1911 : Lord Haldane, in his Memorandum on Army Estimates, states: "great efforts had been made to enable the army to participate actively in the present 'development of aeronautics,' and that five aeroplanes were available for army work, of the Wright, Farman, Paulhan, Bleriot, and Havilland types respectively"

He also expressed a hope that a new army dirigible, the Delta, would be launched at the end of April and that two large airships of foreign manufacture would be ready for use in the summer.

The summer of 1911 came and went, and where did the airships sail to ?

Who dared fly the prehistoric Wright aeroplane ?

or drive obsolete Bleriot XII. ?

"Where were the army pilots who could fly the Havilland ?

The number of times the Paulhan went out might have been counted on the fingers of one hand.

The 'large airships of 'foreign manufacture,' alias the 'Morning Post' and 'Daily Mail' ships, we believe to be still waiting repairs at Farnborough.

The Delta has not yet made her appearance.

The old-fashioned Farman biplane alone was left to the army officer in which to participate actively in the present development of aeronautics.'

In the House of Commons on the 27th of October Colonel Seely in answer to a question from Mr. La Touche: announced that sixteen aeroplanes had been bought or acquired for the Government,

In the House of Commons on the 29th of October Colonel Seely in answer to Mr. Sandys [who suggested that as the Air Battalion were only in possession of ten aeroplanes the Government had still six to buy] Stated that we had 'about sixteen aeroplanes,' and Stated a few words further on 'that we really had nineteen aeroplanes, but one of these was broken beyond repair and another was out of date.' Stated also that the Government was the fortunate possessor of eleven types of machines, as an effort had been made to try all types.

## Notes on "Civil Aviation"

Hope rises eternal in the human breast and we felt uplifted in hearing that we had 'about sixteen aeroplanes,' since the presumption was that they were all machines that could be used in the field.

But what did we find on investigating this matter ?

1. six were "out-of-date machines" suitable for training purposes only,
2. that of the two Valkyries given by Mr. Barber to the Army:
  1. one had no engine and
  2. the other was still in pieces after the accident which occurred on its only flight, an accident in which one of our most gallant aviators, Lieutenant Cammell, was killed ;
3. the Paulhan biplane had seldom been flown.
4. there were four fast modern machines fit to take the field, three of which had at that date never been flown by any army pilot.
5. only scattered traces of those other dismembered and antique' machines could be found, which brings the total up to about 'sixteen ' or ' really nineteen.'

To man this strange and motley fleet we had:

1. seven army pilots,
2. no observers and
3. no [support] personnel.

Colonel Seely's answer, though not untruthful, is misleading, and we cannot insist too strongly that the army *is not the place* for trying 'all types of machines.'

The army is no place for experiments.

Experiments should be conducted outside its precincts by the aeroplane manufacturers, as in France.

Anything else is waste of public money.

What a situation for a Great Power to find itself in on the outbreak of war !

It is obvious that good-naturedly to assure us of the mere existence of aeroplanes in England is foolish in the extreme, if it is nothing worse, as it shows no grasp of the essential features of the problem of military aviation.

What ordinary Englishmen want to be sure about is *that there is a well equipped group or corps of aeroplanes ready to take the field to-morrow, complete in every detail:*

1. with pilot,
2. with observer,
3. with mechanic, and
4. with three men,
5. with motor lorry,
6. with transportable shed and
7. with spare parts.

Now judged by this standard we had last autumn no aeroplane fit for immediate service and this in spite of the fact that in the past year we spent 150,000L on this service and killed two military aviators.

Members of Parliament should make it their business to know not only whether aeroplanes exist but whether they are properly organised for war.

Optimistic generalities such as those given by the Under Secretary for War on the 27th and 29th of October only throw dust into the eyes of the general public.

**Public opinion must be trained** to interest itself in this presently most vital question—really interested, not stimulated in a spasmodic way, as it was over the dirigibles.

It is probable that not one in all the hundreds of persons incited by the 'Daily Mail' and 'Morning Post' to clamour for airships in 1910 could tell us what those airships have done or even where they are.

They both arrived in this country in October 1910.

The "Lebaudy" ship is in pieces awaiting repairs to her envelope and cradle that were necessitated by an accident that occurred during her only outing in this country on the 4th of May 1911. She has never been put up for the War Office tests as originally

## Notes on "Civil Aviation"

arranged, or been put in commission as a training ship for observers. At any rate, if she had been tested and had failed to pass the tests she might have been returned to France and been replaced by a more efficient machine, since she was only sent over 'on approval.'

The hangar at Wormwood Scrubbs is empty owing to the fact that the "Clement Bayard" is lying in pieces at Farnborough, waiting for renewal of the defective envelope which was purchased with the machine.

At present we have but two army airships, the Beta and the Gamma, in use, and one, the Delta, announced by Lord Haldane to appear in April 1911, is still being built.

First of all ought we not, since we have lost so much time already, to acquire a small nucleus of aeroplanes from foreign sources for our Air Corps, *so that at least we have something to use immediately in the field should occasion demand it?*

Something in which to train our officers for active service?

*"on the outbreak of war, a haphazard aggregation of individual machines and pilots **can not be relied on**" - Colonel Capper*

For *in order to attain any degree of comparative safety in war time, when their nerves will be additionally strained, they must fly machines to which they have become accustomed in peace time.* This, in our opinion, is the necessary first step towards efficiency, and it is a step that should be taken at once without waiting for the results of the Government Prize Competition.

1. the best military machines must be provided, and
2. the best military machines kept up in peace, and
3. numbers of officers be thoroughly trained in their uses by constant practice,
4. numbers of men be thoroughly trained in their uses by constant practice,
5. officers and men be thoroughly trained, both as individuals and as units of regular flying squadrons.'

Let us consider for a moment the most simple and obvious ways in which we could become possessors of a well equipped even though small aero fleet.

1. The four leading French firms have schools, and
2. it might be a good plan for a British officer and mechanic to be sent to each of these firms for two months in order that they may thoroughly learn to understand the particular type of military machine made by the firm, and then
3. four machines should be purchased of each type ;
4. four preferably, as they would make a handier group.
5. Each of these groups should be accompanied by the mechanic trained in France.
6. The officer should be responsible for training the personnel allotted from the Royal Engineers to the aeroplanes in his group.

We agree with the commandant of the Air Battalion that:

1. there should be as few varieties of machines as possible, and
2. parts should be standardised within homogeneous groups.

The important thing is:

1. that each aeroplane group (whether it consist of two or four machines) should be kept separate,
2. that parts and pilots [for the group] would be immediately interchangeable, and
3. one of the group would always be ready for active service.

**We lay great stress on the fact that the machines of each group should be of the same type.**

Stability in aeroplanes depends almost entirely on the action of the pilot, and the methods of control vary in different aeroplanes. In gusty weather the balancing must be instinctive on a known machine.

Pilots say that it takes six weeks to get to understand a machine of a different type, therefore it is very dangerous to expect a man to fly a type other than his own, and even machines of the same type vary.

A pilot highly skilled in one type of machine may be quite incapable of driving another type except on an absolutely calm day.

It is of the highest importance that officers:

1. Should be familiar with the machines they will have to fly on active service, and also

## Notes on "Civil Aviation"

2. That they should have a basis of common understanding and mutual confidence with the observer they carry, an understanding that can only be arrived at by many flights together in peace time.

In any case if the French themselves were at war:

1. it would be useless to expect them to supply spare parts to other nations,
2. it is certain that in such an eventuality no single Gnome engine would be allowed to leave the country.

The average life of the Gnome engine is only 100 hours in the air, after that period many of the important parts have to be replaced.

The necessary third step towards efficiency would be, in our opinion, to remove the head-quarters of the aeroplane section away from Farnborough.

The whole country is extremely difficult to fly over, but Laffan's Plain:

1. is surrounded by trees which, as all aviators know, cause dangerous 'remous.' Cross-country flying is discouraged by this belt of trees which is encountered in half-a-mile in any direction, for no aviator can tell in a minute or two whether his engine is really working properly.
2. the landing there is bad, as the surface is composed of long rough grass, and small bushes dangerous to the inexperienced aviator.

The Government has at its disposal admirable ground for training aviators on Salisbury Plain:

1. the Bristol School has trained large numbers of aviators without any accident at all.
2. The surface of Salisbury Plain is undulating, but it offers any amount of good landing places.
3. It is, of course, not so perfect as the French aviation grounds, which are flat and of great extent, but it is safe and the place par excellence in which to establish an Air Battalion.

All our peace preparation must obviously take the form of organisation for war.

Most emphatically we must not waste the first half of 1912 as we have wasted the whole of 1911.

We must not wait until the competition is over to give our airmen the most modern machines to practise on, for above the strife of parties and the din of competition sounds the clear call of Patriotism.

It is sounded by the military aviators who, for the sake of their country and for no earthly gain, are willing to risk their necks in prosperous times of peace.

No machines, after all, can be too good, as no honour can be too great for the army pilot.

Every nation must be proud of the men who are ready to live[give] their lives on terms of active service.

Things have been made needlessly difficult for military aviators in England.

Has not the time come to give them every facility to place their dangerous art at the service of their country?

In conclusion we must confess to being haunted by:

1. *the thought that "the sovereignty of the air" may one day make "sovereignty of the sea" a thing in itself of no account ;*
2. *the thought that "command of the air" may come to connote "command of the sea".*

Given:

1. automatic stability,
2. increased airworthiness and
3. accuracy in attack through explosives dropped from above,

in short, steady progress on what are the natural lines of development for aircraft,

May not the aeroplanes and dirigibles of a power which commands the air master the battleships of an island state which has trusted for security too exclusively to sovereignty of the sea?

1912 : British grammar school intake : "selected students judged capable of benefitting from additional education".

Magazines extolling "derring-do" and "adventure" were extremely popular in the late 1800's early 1900's.

## Notes on "Civil Aviation"

January 1912 : First Successful "Wireless Controlled" Artillery Shoot

Captain H.P.T. Lefroy R.E, as observer and Geoffrey de Havilland piloting, the B.E.1 was flown in the first successful wireless - controlled [meaning "directed via radio"] artillery shoot over Salisbury Plain.

There was no such thing as "Canadian citizenship" until 1947 <sup>43</sup>, thousands of Canadian Expeditionary Force (CEF) volunteers in WW1 were recent British immigrants <sup>44</sup>; other recent immigrants from Great Britain may have gone back to England to enlist in British units <sup>45</sup> Canadians trickled into the British flying services by different means <sup>46</sup>.

There was no air recruiting office in the Canadian Department of Militia <sup>47</sup>, British officers on the Governor General's staff found numerous young men volunteering to join the flying services. <sup>48</sup> After April 1915, : British [Army] officers actively sought out enlistments from Canada.

March 1912 : To date since 1910 the Royal Aero Club has issued 8 Dirigible pilots' certificates, 7 were held by Officers of the British Army.

14 March 1912 : South Farnborough, England : Experimental Bleriot Type #1 "B.E.1" (with ref to his sketch #10) is test flown by Maj. S. Heckstall-Smith ( Major S. Heckstall-Smith, R.F.C. to Temp. Lieut.-Col. R.F.C on 1st Sept. 1917) for the Superintendent of the British Army's Aircraft Factory. Maj. Heckstall-Smith personally Certifies :-

- a) that "Aeroplane B.E.1 has been thoroughly tested by me, and
- b) the Mean Speed over a 3/4 mile course with a live load of 25 stone and sufficient petrol for one hours' flight is 58-59 m.p.h.
- c) The rate of rising, loaded as above, has been tested up to 600 ft and found to be at a rate of 185 ft per minute.
- d) The machine has been inverted and suspended from the centre and the wings loaded three times the normal loading.
- e) On examination after this test the aeroplane shows no signs of defect.

This forms the "B.E.1 Certificate" given to the aeroplane.

May 1912 : Lefroy fits a generator, driven by bicycle chain from the engine, to the same B.E.1 flown in January.

Experiments continued using descendants of the B.E. 1 through to 1913 and 1914.

1912 : Wilbur Wright' is killed - Orville later sells his interest in their patent to Wright-Martin Company.

13 April 1912 : Royal Flying Corps established:

The recommendations by the Committee of Imperial Defence result in a Royal Warrant being issued to constitute a "Royal Flying Corps".

The British Imperial Government publishes a "White Paper" [command paper?] giving details of its formation; a sum of £320,000 had been allotted to the War Office for this purpose and £90,000 was to be spent on a new aerodrome at Upavon on Salisbury Plain.

A total of 36 new aircraft [half of them British built] had been ordered to supplement the sixteen already owned by the Army.

25 April 1912 : London, the Government announces "plans to train 120 officers and men for Air-ship work" src - 37 HC Deb 51, 1382. Their training begins at Aldershot, similar to that of Cavalry, only AFTER they were able to demonstrate they could command their new mount were they admitted to "Service Schools" ..the new pilots would have to obtain their Royal Aero certificates first, and that officers would have to pay for for their own "Cross country flights" in service machines - and then get some reimbursed for the cost, thanks in part to protest in parliament, pg 21 british airships 1908 - 1931.

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<sup>43</sup> <https://legionmagazine.com/en/2015/06/canadian-flyers-go-to-war/#sthash.Nujhovay.dpuf>

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## Notes on "Civil Aviation"

May 1912 : The first aeroplane takes off from a moving ship in Britain.

18 June 1912 : Desmond Arthur granted Royal Aero Club certificate No.233 after completing flying trials in a Bristol-Prier monoplane at Brooklands.

30 June 1912 : United States Aeroplane exports

Over the past 12 months, the United States has exported 27 "American-built" aeroplanes valued at \$105,805 while 17 machines valued at \$59,713 were imported into the U.S.A. <sup>49</sup>

July 1912 : formation of the Royal Flying Corps (RFC) under control of the British Army

04 July 1912 : The Inauguration of the Central Flying School of the British Military, Upavon. <sup>50</sup>

Thursday 04 July 1912 marked the advent of the flight of the first aeroplane at the RFC's Central Flying School at Upavon, Wilts.

The official list of staff for the School will not be published until October, 1912.

Captain Fulton, R.F.A., flew the first machine to arrive at the school from Farnborough in a 20 m.p.h. wind.

The machine, a 50 h.p. Avro biplane, behaved splendidly, the distance of 50 miles being covered in 1\ hours, or about 60 m.p.h., allowing for the 20 m.p.h. head wind. He landed at 4.30 a.m.

Captain Gerrard, R.M.L.I., also started from Farnborough on a new 70 h.p. Short biplane, a two-seater, side-by-side type ; but, owing to plug trouble, he- was forced down at Oakley.

Misfiring commenced about ten minutes after he started, yet he kept on for almost an hour, in a high wind, until eventually compelled to alight.

After having new plugs put in, he got away from Oakley in the evening, and landed at the school at about 7.30 p.m.

The wind was very strong when he landed, and for lack of good landing ground he came down on some soft land.

Fortunately nothing was broken. src CG Grey : The Aeroplane. July 11th, 1912.

05 July 1912 : The Stonehenge Accident - 2 Pilots killed in a Nieuport monoplane <sup>51</sup>

Captain Eustace Broke Loraine, Grenadier Guards (seconded for duty with the RFC) and Staff-Sergeant R.H.V. Wilson, R.E - mechanic, RFC, were killed while flying a Nieuport monoplane which was seen to bank over for a sharp to the left to reach Lark Hill, drop its wing [stalled] and then dive into the ground. Lieut. Fox [flying in the area?] landed at the scene and found both men still alive, extracted the men from the wreck and made them as comfortable as possible, he then flew for assistance.

Minutes after more help arrived, Sergeant Wilson died of a broken neck.

Captain Loraine's right thigh and left ankle were broken and he was taken to Bulford Military Hospital, where he died ten minutes after his admission [It was at first thought that his skull was fractured, but autopsy proved this not to be the case] and his death was put down to "general shock to the system" [being massive injuries to his internal organs].

The Cause of the Accident.

It was fairly clear that the accident was caused by over-banking, however Captain Loraine was noted to be "a skilful pilot not likely to make such a mistake" from lack of knowledge. [was Staff-Sergt. Wilson in control of a dual control machine ??]

Possibly contributory causes of the accident:

1. *the strange downward remou which is known to exist* over and about Fargo Wood and Stonehenge.
2. The steeply banked turn, and possibly a momentary mistake in the use of the controls on a machine which is known to be "tricky in handling"

It was definitely established that all control wires were in working order after the accident.

The pilot's error was more probably primarily due to the custom, which cannot be sufficiently condemned, of allowing pilots to fly a variety of different machines, many of which had entirely different control systems.

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<sup>49</sup> figures published by the U.S. Department of Commerce and Labour, Annual report for the year ending 30 June 1912

<sup>50</sup> CG Grey : The Aeroplane. July 11th, 1912.

<sup>51</sup> CG Grey : The Aeroplane. July 11th, 1912.

## Notes on "Civil Aviation"

### Flying the Nieuport <sup>52</sup>

1. warping of the wings (rolling) is done with the feet, and
2. the steering (rudder) by moving the lever.
3. up to a point, the lateral stabilising can be done with the lever operating the rudder, as in the usual system:
  1. in turning to the left the lever is pushed to the left, the machine goes round to the left, and the right wing banks up.
  2. If the aircraft banks too far, a sudden movement of both the lever, and the rudder, to the right will swing the machine suddenly to the right and bring it up to an even keel ;
4. Once a side-slip to the left has started, the rudder would have no effect unless it were pushed to the left.
5. Pilots used to flying machines with the ordinary lever actuated wing-warp and rudder-bar steering, might:
  1. Try to steer to the left with his feet thus increasing the banking up of the right wing, and
  2. try to warp the left wing up with the lever, so preventing the rudder from acting at all.
6. If this happens, the Nieuport would, in time, get its nose down and dive, but by then it would have reached a very big speed, and be slow in getting its nose up again.
7. There has long been an opinion in France that if a Nieuport gets past a certain angle in diving it will not come back at all.
  1. this has never been proved.
  2. it seems possibly - for one may assume that the curves of the body aft are designed to give the correct streamline at the designed speed of the machine.
  3. Now, if this speed be, say, 75 miles per hour, and the speed in diving be increased to, say, 120 miles per hour, it seems quite possible that the blunt entry of the machine may, at that speed, set up eddies which only meet at a point some distance behind the tail and elevator, for the Nieuport body is very short.
  4. If this were so, it would mean that the elevator and rudder were working in the eddies left by the blunt entry, and so would be slower to act, or it is even possible that the body and wings might set up such eddies that the elevator would not work at all, and so the machine would never come up, if she once dived.

Certain British monoplanes with short bodies are very sensitive to the controls at their proper flying speed, and alleged to be very slow in coming up if dived too steeply. The point is one which needs to have careful research work devoted to it.

But the two chief points are that <sup>53</sup>:

1. Pilots should fly their own machines and no others, except under special circumstances, and
2. all controls should be standardised.

In time it will even be better to standardise machines as well. <sup>54</sup>

There are bound to be various types for various purposes, just as there are various types of guns, but each type should itself be standardised as soon as possible.

### July 1912 : Don't attempt to learn Aviation as you would learn Cycling.

Ensure success by getting first a thorough technical knowledge of the whole mechanism of the aeroplane.

There is no better way of getting that groundwork of success than by taking an I.C.S. Course in Aviation You are taken from the first principles to the most advanced data.

By means of the simplified, easily-mastered text books and instruction papers, your progress is rapid in acquiring sound and accurate knowledge.

Two I. C.S. Aviation students write :

"It gives us great pleasure to bear testimony to the value of I.C.S. Instruction. We have taken your I.C.S. Course for some time and have greatly benefited by it. We have attended one of the best technical schools in the kingdom, but taking everything into consideration it has no comparison with the Course we are now taking with the I.C.S." - H. H. & J.H JAMES, Narberth, Pem.

Source : CG Grey : The Aeroplane. July 11th, 1912.

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<sup>52</sup> CG Grey : The Aeroplane. July 11th, 1912.

<sup>53</sup> CG Grey : The Aeroplane. July 11th, 1912.

<sup>54</sup> CG Grey : The Aeroplane. July 11th, 1912.



## Notes on “Civil Aviation”

August 1912 : the British **Military Aeroplane** competition:

Entrance requirements:

Aeroplanes entered into the competition:

1. must have an engine capable of being started easily.
2. should have an engine capable of being started from pilot's seat
3. Must be able to stay in place by itself with engine(s) running - no holding it back using men.
4. Must have seating for pilot plus at least 1 observer
5. BOTH Pilot and observer(s) must have best possible view of the ground from their positions  
Testing of this was accomplished using the aircraft placed in flying position on the ground over a grid.
6. Must have Dual Controls
7. Must provide the pilot and observer(s) with Shelter from the wind and elements
8. The Pilot and the Observer(s) must be able to communicate with each other.
9. ALL parts of the airframe [and the engine?] are to be interchangeable.
  1. Like parts must be interchangeable with each other
  2. Like parts must also be interchangeable with “sample parts” selected from spares-stock
10. The Aircraft must be:
  1. capable of “quick” dis-assembly and re-assembly in the field.
  2. Transportable by road, either on it's own wheels or by trolley
  3. Width when packed for road travel must be max. 10 ft
  4. Packing case suitable for rail shipment case must be included. Case must break down for storage in min. space.  
Testing of dis-assembly and re-assembly
11. Engines should be silenced - optional.

Speed:

Operation: The operation of the aeroplane must not place undue stress / strain upon the pilot (ease of control / lightness of controls / simplicity of controls /

Categories for entry:

- A. British Designed Aeroplanes, British Built & using British Engines
- B. British Designed Aeroplanes, British Built & using Foreign Engines
- C. Foreign Designed Aeroplanes, British Built & using Foreign Engines
- D. Foreign Aeroplanes

Judges of the Aeroplanes in the competition:

1. Brig-Gen David Henderson, Dir. Military Training
2. Capt. Godfrey M. Paine, R.N - Commandant RFC's CFS
3. Maj. F.H. Sykes, Officer Commanding, RFC
4. Mervyn O'Gorman, Superintendent - Royal Aircraft Factory

In his work “The History of British Aviation” author R. Dallas Brett states “It was regrettable that their ultimate judgement fell so far short of their organising ability” <sup>55</sup> in his book, however, when one considers what was being discussed behind closed doors - that most persons of the day would be ignorant of, the trials were quite telling as it revealed to the people charged with fielding a force, exactly what Great Britain was capable of of fielding, as well as where her weaknesses lay in comparison to her competition in the event the Empire went to war and aircraft were launched into the fray.

Aeroplanes entered for the 1912 British Military competition (31)  
Green = competed

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<sup>55</sup> “The History of British Aviation” The Aviation Book Club, John Hamilton Ltd, London , 1933 - author R. Dallas Brett , pg 170

## Notes on "Civil Aviation"

Red = Did not compete

Pink = Issues were had

Notes: DD = Direct Drive, * = Systeme Canton Unne, Deutsche Flugzeug Werke = MARS, Jacob Lohner & Co = Aero-Plane Co. Source : CG Grey - The Aeroplane, 25 July 1912												
Cat.	Builder - Designer	Model		Seats	Type	Span	Length	Config.	Hp	Engine	Empty Weight	Flown by
A	A.V. Roe				Monoplane			Tractor	60	Green		Lt. W. Parke, R.N
A	A.V. Roe				Monoplane			Tractor	60-80	A.B.C.		R.L Charteris
A	Flanders		O-P-2-1		Biplane	43	23		120	A.B.C.	1000	F. P. Raynham
A	Harper	Did Not Participate - No data recorded							60	Green		
A	Mersey Aeroplane Co / R.C. Fenwick			1	Hi-Wing Monoplane	35	24	Pusher	45	Isaacson Radial	750	R.C. Fenwick
B	Aerial Wheel	Did Not Participate - No data recorded										
B	Bristol	Military	O-P-1-1	2	Monoplane	40	29	Tractor	80	Gnome Rotary	800	James Valentine
B	Bristol	Military	O-P-1-1	2	Monoplane	40	29	Tractor	80	Gnome Rotary	800	H. Busteed
B	Bristol	Military	O-P-2-1		Biplane	40	29	Tractor	70	Daimler	1700	E. C. Gordon
B	Bristol	Military	O-P-1-1		Biplane	40	29	Tractor	100	Gnome Rotary	1500	C. H. Pixton
B	Cody				Monoplane			Pusher	120	Austro-Daimler		S.F Cody
B	Cody	Cathedral		4	Biplane			Pusher	120	Austro-Daimler		S.F Cody
B	Coventry Ordnance	No. 1	O-P-2-1		Biplane	40	34		100	Gnome Rotary	1100	T. Sopwith
B	Coventry Ordnance	No. 2	O-P-2-1		Biplane	35	32		110	Chenu	1250	T. Sopwith
B	Handley Page		O-P-1-1		Monoplane	40	28		70	Gnome Rotary	850	E. Petre
B	Martin-Handasyde	IV-C	O-P-1-1		Monoplane	42	38		75	Chenu	1250	Gordon Bell

## Notes on "Civil Aviation"

Notes: DD = Direct Drive, * = Systeme Canton Unne, Deutsche Flugzeug Werke = MARS, Jacob Lohner & Co = Aero-Plane Co. Source : CG Grey - The Aeroplane, 25 July 1912												
Cat.	Builder - Designer	Model		Seats	Type	Span	Length	Config.	Hp	Engine	Empty Weight	Flown by
<b>B</b>	<b>Piggott</b>			<b>2</b>					<b>35</b>	<b>Anzani</b>		<b>Parr</b>
B	Vickers				Monoplane			Tractor	70	Viale		L.F. McDonald
C	Deperdussin				Monoplane			Tractor	100	Gnome Rotary		Jules Vedrines
C	Deperdussin				Monoplane			Tractor	100	Anzani		Lt. J.C. Porte, R.N
D	Bleriot	Military (XI-2- 1912)	O-P-1-1	2	Tandem Monoplane	29	25		70	Gnome Rotary	600	Gustav Hamel
D	Bleriot	Military (XXI - 1912)	O-P-2-1	2	Side-by-Side Monoplane	36	27		70	Gnome Rotary	700	Perreyon
D	Borel		O-P-1-1	2	Monoplane	38	23		80	Gnome Rotary	735	Chambenois
D	British - Breguet	No. 2	O-P-2-1	2	Biplane	48 ?	32 ?	Tractor	110	Salmson / Cantone Unne ?	1300	Moineau
<b>D</b>	<b>British - Breguet</b>	<b>No. 1 *</b>	<b>O-P-2-1</b>	<b>2</b>	<b>Biplane</b>	<b>48 ?</b>	<b>32 ?</b>	<b>Tractor</b>	<b>80 / 110</b>	<b>Salmson / Canton Unne ?</b>	<b>1200</b>	<b>W.B.R. Moorhouse</b>
D	Deperdussin				Monoplane			Tractor	100	Gnome Rotary		Prevost
D	Hanriot		O-P-1-1		Monoplane				100	Gnome Rotary	981	Sydney V. Sippe
D	Hanriot		O-P-1-1		Monoplane				100	Gnome Rotary	981	Bielovocic
<b>D</b>	<b>Jacob Lohner &amp; Co</b>	<b>Arrow - Plane</b>	<b>O-P-2-1</b>		<b>Biplane</b>	<b>50</b>	<b>40</b>		<b>120</b>	<b>Austro-Daimler</b>	<b>1584</b>	<b>Lt. von Blaschke</b>
D	Kny	Did not Show										
D	Maurice Farman	Military	1-2-P-2		Biplane			Pusher	70	Renault		Verrier
	MARS		O-P-1-1		Monoplane	52	45		100	Mercedes	1200	Ober-Lt. Bier.
	Royal Navy				Monoplane							
	War Office		O-P-2-1		Biplane				60	Green		Lt. W. Parke

## Notes on "Civil Aviation"

1912 : British Aeroplane manufacturers / Pilot Schools				
Aerodrome:	Aeroplane Co.	Pilot training School	Types	Pilots taught
Brooklands	Bristol Aeroplane Co	Bristol Aeroplane Co		63
	Depersussin	Depersussin		5
	Ducrocq	Ducrocq		1
	Hewlett & Blondeau	Hewlett & Blondeau		1
	Avro	Avro		3
	Sopwith	Sopwith		11
	Vickers	Vickers		6
Eastchurch		Ogilvie		1
		R.F.C - Naval Pilot School		16
Eastbourne	E.A.C	E.A.C		6
Fairlop	Handley-Page	Handley-Page		1
Farnborough	Cody	Cody		1
Freshfield near Liverpool (Lancashire?)	Melly	Melly		2
Hendon	Grahame-White	Grahame-White		20
	Bleriot	Bleriot		8
	Deperdussin	Deperdussin		9
	Ewin	Ewin		7
Salisbury Plain	Bristol Aeroplane Co	Bristol Aeroplane Co		35
Upavon		Royal Flying Corps - C.E.S - British Army		14
Windermere	Lakes	Lakes Flying School?	Seaplanes	1
14 students of this total were foreign, 3 self taught pilots are not reflected in this total. Additional British pilots 8 not included were 8 qualified in France and 6 qualified in the United States in 1912. To date 385 pilot certificates had been issued by the Aero-Club to British subjects, while 21 pilots to date had been killed in flying accidents				211

### The Aerial League's National Subscription.

It has now been definitely decided that a national subscription is to be organised by the Aerial League throughout the United Kingdom.

## Notes on "Civil Aviation"

A number of notable persons, whose bona fides cannot for a moment be doubted, have signified their thorough approval of the idea, and the fact that the fund will be in the charge of the Official Trustee is sufficient guarantee that it will be properly administered.

Those who know General Arbuthnot, the chairman, and Colonel Massy, the vice-chairman, of the League, must realise the absolute honesty of purpose which actuates them in organising the fund, and the only reason that can prevent anyone from subscribing to it is a doubt as to the purposes to which the money raised may be put.

On this score it appears that there need be no anxiety, for it is the intention of the Council of the League to invite the Aeronautical Society and the Royal Aero Club to appoint a technical committee who will advise the Council of the League as to the spending of the money. The writer has talked the matter over at considerable length with Colonel Massy, and gathers that there is on this occasion no question of buying aeroplanes haphazard and presenting them to the Army, or of endowing a technical college for the education of would-be aeronautical engineers. Subject to the advice of the proposed technical committee, it appears that it is the intention of the Council to devote the money in the best possible way to fostering the growth of the British aeroplane industry, on the grounds that the best guarantee of an adequate aerial force in the future is a sound industry in this country, which would be in a position, when called upon, to equip the Royal Flying Corps with machines of the right kind at short notice.

This may be done by organising, some time in the future, a competition for all-British military aeroplanes built exclusively by British firms, with really handsome prizes for all competitors who pass a certain standard of efficiency, and it may be done at the same time by equipping public aerodromes in various parts of the country, which will help to raise local enthusiasm and keep it alive afterwards, and provide landing places for aviators who are flying about the country either for service purposes or for trade purposes.

In fact, the whole "scheme" (Programme) is arranged so that, acting on the advice of a thoroughly adequate technical committee, the £50,000 which it is proposed to raise may be made to produce really excellent results.

There should, as a matter of fact, be little or no difficulty in raising the money, and the replies which have been received from the authorities in various towns in the provinces to the letters asking them to co-operate have been almost invariably most encouraging.

The writer would, therefore, appeal to all readers of The Aeroplane to put themselves in touch with the Secretary of the Aerial League at Coventry House, Coventry Street, W., and ask that he will give them the address of the nearest collecting centre which is being organised, so that when the work of collecting really starts readers of the paper may do their part in the collecting.

<b>SCHEDULE OF LOAD FACTORS AND FACTORS OF SAFETY</b> <b>LOAD FACTORS SUB-COMMITTEE Reports and Memoranda, No. 673. January 6th, 1920</b>				
	<b>GENERAL CLASS</b>	<b>Total Weight of Aircraft.</b>		
<b>Item</b>	<b>Definition</b>	<b>Up to 3,000 lbs.</b>	<b>8,000 - 10,000 lbs.</b>	<b>Above 10,000 lbs.</b>
A	Load factor with C.P. in its most forward position	8	8 - 6*	6
B	Load factor with C.P. in the position corresponding to maximum horizontal speed at ground level	6	6 - 4.3*	4.5
C	Factor of safety in a terminal nose dive	1.75	1.75	1.75
D	Specified lift coefficient for fins and rudders. (Under this loading the factor of safety of the fuselage should be unity)	0.6	0.6	0.6
e1	Static load factor on undercarriages	8	8 - 6*	6
e2	Specified vertical velocity (ft/sec.) for determining travel of undercarriages	10	10	10
Note	* The decrease in load factor from the larger value is directly proportional to the increase in the weight of the craft.			

31 July 1912 : Hugh Trenchard Solos at the British Army's "Central Flying School".

## Notes on "Civil Aviation"

(Not overly gifted academically, he failed the entrance exams for the Royal Navy but after several attempts passed the exams for a career in the army.) became a second lieutenant in the Royal Scots Fusiliers. July 1901.  
Lord Kitchener, Commander-in-Chief, tasks Hugh Trenchard with creating a "new corps of mounted infantry".

September 1912 : Colonel Seely bans the flying of all monoplanes by pilots of the Military Wing of the RFC  
As a result of the break-up in the air of two monoplanes of different types whilst flying in normal weather conditions, the Secretary of State for War, Colonel Seely banned the flying of all monoplanes by pilots of the Military Wing of the RFC.  
The ban was finally lifted in February 1913.

October 1912 : The first appearance of the RFC as a separate unit. RFC Staff list is published in the "Army List", October 1912.

### 1. RFC - Central Flying School [@ Upavon]

Officer Commanding : Capt. Godfrey M. Paine, M.V.O, R.N

Ground and Air Instruction Staff:

Ground Instruction:

1. Aeronautic Theory: Col. H.R. Cook
2. Aeroplane and Engine Construction: Col. H.R. Cook

Flying Instructors:

1. Maj. E.L Gerrard, R.M
2. Maj. H.M. Trenchard, D.S.O ( Trenchard had been taught to fly by T.O.M Sopwith)
3. Capt. J.D.B Fulton
4. Capt. P.W.L Broke-Smith

Inspector of Engines : Engineer Lieut. C.R.J. Randall, R.N

### 2. The Military [Army] Wing [based @Salisbury Plain, *operate from Farnborough*]

Officer Commanding : Maj. F.H. Sykes

Adjutant: Lieut. B.H. Barrington-Kennett

No. 1 Squadron RFC: Air-Ships, Balloons & Box-Kites

Squadron Commander:

Flight Commanders:

1. Capt.

Flying Officers:

1. Capt.

Technical Officers:

No. 2 Squadron RFC: Air-Ships, Balloons & Box-Kites

Squadron Commander: Maj. C.J. Burke

Flight Commanders:

1. Capt. G.H. Raleigh
2. Capt. H.R.P Reynolds

Flying Officers:

1. Capt. G.W.P. Dawes
2. Lieut. C.A.H. Longcroft
3. Lieut. G.B. Barnes
4. Lieut. G.T. Porter
5. Lieut. C.T. Carfrae

Technical Officers:

No. 3 Squadron RFC: a.k.a the "Lark Hill" Squadron

Squadron Commander: Maj. H.R.M. Brooke-Popham

Flight Commanders:

1. Capt. C.R.W. Allen
2. Capt. B.R. W. Beor
3. Capt. D.G. Conner

Flying Officers:

1. Lieut. A.G. Fox

Technical Officers:

## Notes on "Civil Aviation"

### 3. The Naval Wing [@Eastchurch]

Officer Commanding : Commodore C.R. Samson, R.N

Flying Officers:

1. Capt. R. Gordon, R.M
2. Lieut. J.W. Seddon, R.N
3. Lieut. W. Parke, R.N
4. Lieut. C.J. L'Estrange Malone, R.N
5. Sub-Lieut. F.E.T. Hewlett, R.N

Technical Officers:

### 6. Reserve Wing [@ ??]

Officer Commanding : Brigadier-General D.C.B. Henderson, D.S.O, C.B.

Flying Officers:

1. Lieut. O. Gordon Bell

05 October 1912 : The London Polytechnic Aero Club and Flying Society,

owns two Weiss gliders, presented by Mr. Jose Weiss, a Wright type biplane glider, presented by Mr. H. Vaughan, and a 44 ft. span "portable" monoplane built at the London Polytechnic by students.

*The Wright especially has done a good deal of valuable service during the summer, and most successful week-end meetings have been held.<sup>56</sup>*

*The club has its headquarters at the Polytechnic, Regent Street, W., where technical and practical classes are held during the winter evenings.*

*This is the kind of club which deserves every support, but the "Poly. Ae. Club" not having courted publicity, is not very well known, and consequently not appreciated. We hope, however, to do big things in the future, and anyone joining now will be in time to start evening classes in Aeroplane Drawing and Design, Aeroplane Construction and Aero Workshop Practice, Aerodynamics, & etc. <sup>57</sup>*

*Thanking you for the valuable knowledge derived from a weekly perusal of your valuable paper. <sup>58</sup>*

November 1912 : Frederick Wanklyn of Montreal, graduate of Royal Military College, commissioned in the British Army in 1909, joins the British flying services, ends the war as a lieutenant-colonel - RAF. Pilot.

12 November 1912 : When aviation was young and hearts were high the Compagnie Generale de Navigation Aerienne (holders in France of the Wright patents) engaged M. le Comte de Lambert, a Russian nobleman, and Mr. Wilbur Wright's first pupil, to act as technical engineer and pilot.

But to-day, when the sky is grey, the company [the Compagnie Generale de Navigation Aerienne] has found the prosecution of others for infringement of the Wright patents pay better, and they have relinquished construction and the Comte de Lambert as well.

They thanked him graciously for his services. But that was all.

*The Comte de Lambert feels "aggrieved" and sues the Compagnie Generale de Navigation Aerienne in the High court with the result that they pay him £1,200 and costs.*

21 November 1912 : The Aeronautical Society.

Students:

1. attending regular science courses at recognised technical colleges,
2. attending engineering courses at recognised technical colleges, or
3. attending aeronautical courses at recognised technical colleges,
4. as well as those pursuing the scientific side of aeronautics professionally,

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<sup>56</sup> W. H. EMERTON, Hon. Gen. Sec, - The Polytechnic Aero Club and Flying Society, Regent St., W.. reported in FLIGHT, OCTOBER 5, 1912.

<sup>57</sup> W. H. EMERTON, Hon. Gen. Sec, - The Polytechnic Aero Club and Flying Society, Regent St., W.. reported in FLIGHT, OCTOBER 5, 1912.

<sup>58</sup> W. H. EMERTON, Hon. Gen. Sec, - The Polytechnic Aero Club and Flying Society, Regent St., W.. reported in FLIGHT, OCTOBER 5, 1912.

## Notes on "Civil Aviation"

are eligible for membership in the students' section, Aeronautical Society, and should apply before 31 December 1912, if desirous, of being admitted without entrance fee.

Applications should be sent to the secretary, 11, Adam Street, Adelphi, W.C.

The studentship of the Aeronautical Society is a branch of the technical side of the Aeronautical Society, which affords a technical status to those admitted thereto.

Student members of the Aeronautical Society may:

1. attend all Aeronautical Society meetings,
2. receive the Society's publications,
3. are admitted at half the usual membership fee, and
4. are exempt from payment of the entrance fee on transferring to associate fellowship. Src : the Aeroplane. November 21, 1912. pg 516

late 1914? : RFC and RNAS accept volunteers from Canada

The RFC and RNAS advertise that they are accepting volunteers from Canada who hold an Aero Club of America (ACA) certificate.<sup>59</sup>

1. Hundreds of young Canadians head to American flying schools or the Curtiss Flying School in Toronto, where they paid \$400 [or more] for "a basic course", got their "ACA ticket", were formally accepted, partially repaid by the British government, then sent to England.
2. As casualties in France mount in 1914 / 1915, the ACA certificate requirement was waived, then reinstated, and finally waived again.
3. By the spring of 1916, men were being accepted after a medical check and then dispatched to England to receive flight training.
4. The RNAS continues to recruit young men in Canada until January 1918; some 635 men were raised.
5. About half paid for their initial flight training before going overseas.
6. Informal RFC recruits numbered about 350 to the end of 1916.<sup>60</sup>

18 December 1911 : The Committee of Imperial Defense - Technical Sub-Committee on Aviation is created "*to examine the possibility of creating an aviation service.*" British Prime Minister H.H. Asquith.

The Royal Navy, otherwise known as "His / Her Majesty's Fleet" had a legislated requirement to understand engineering since 1860 - the year H.M.S Warrior was launched and Officers were required to be "Better qualified to handle Technical matters". Src : Robin Higham, The British Rigid Air-Ship, 1908 - 1931, pg 2

As such, the MANDATORY guidance materials for the "(Royal) Engineers" employed by His Majesty's Fleet (and their "technical staff" were:

1. The "Steam Manual"<sup>61</sup> containing *regulations and instructions relating to the machinery of His Majesty's Ships* and
2. the "Stokers' Manual"<sup>62</sup> for:
  - a) Engine room *Ratings not entitled to the Steam Manual*, and
  - b) Seamen under training in mechanical and stoke-hold work.
  - c)

The importance of these two books is that *they lay down the basis for the engineering department of the Navy to be able to supervise*

A. *the construction and commissioning of, and*

B. *the subsequent in-service inspection, maintenance and operation of*

*ALL of H.M Naval & Aerial ships and their machinery..*

To most, this may seem irrelevant, however the methods of construction, inspection, testing and acceptance for any one of H.M Air Ships of the day (inclusive of Rigid, Semi-Rigid, Non rigid Aerostats and also boat hulled Aerodynes) followed exactly the same process as any other ship, no matter the medium (water or aether) they floated upon.

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<sup>59</sup> <https://legionmagazine.com/en/2015/06/canadian-flyers-go-to-war/#sthash.Nujhovay.dpuf>

<sup>60</sup> <https://legionmagazine.com/en/2015/06/canadian-flyers-go-to-war/#sthash.Nujhovay.dpuf>

<sup>61</sup> His Majesty's Stationary Office (HMSO), London, 1910

<sup>62</sup> His Majesty's Stationary Office (HMSO), London, 1912



## Notes on "Civil Aviation"

Admiralty Rigid Air-Ship construction process:

1. The assorted parts of the hull were laid out and built in sheds beside the construction bay.
2. The bulkheads of the ship, primary "Transverse Frames" were assembled flat, on a building jig - for an airship these were circular.
3. Once completed, the frame was lifted off the jig and another frame assembled on the jig.
4. The frames would then be assembled on a "Tower" and longitudinals and false frames added, these "Bays" would then be removed from the tower and placed on rotating cradles while final bracing and adjusting was accomplished.
5. As the multiple bays were completed, they would be lined up and additional intermediate frames and longitudinals added to connect them all together.
6. Once the skeleton of the hull was completed, it was "'Hung from the roof of the Shed" (hence the term Hangar) using block and tackle while the gas-bags were installed and inflated, the outer skin laced on and the tail assy, control cabin and engine cars - all assembled separately - were then attached.
7. A "Lift and Trim" test was performed with the air-ship still in the shed. During this test the vessel was allowed to float freely using its' own buoyancy but restrained using lines attached to "weights and balances" in order to determine her waterline trim.
8. Adjustments were made using weights hung about the structure - where necessary - to ensure the ship would ascend or hover in a neutral position using buoyancy alone.
9. Upon completion of the "Weight and Balance" test, the engines were tested with the ship tethered in order to ensure they functioned and could be properly operated.
10. Having successfully passed these two tests, the vessel was taken from the construction facility "Into the Field" where inclination tests to determine correct rigging and installation ( i.e to make sure nothing came loose) were accomplished.
11. The final testing was flight testing, which originally consisted of about 4 hours in the air but was steadily increased until, for R-38, the requirement was 150 hours or more including sustained full speed, bad weather etc.
12. Having passed all of the construction testing for acceptance, the vessel was then passed-off to the Admiralty and commissioned - just like any other "Naval Vessel". A Navy crew was assigned to the Air-Ship and took responsibility for her as a weapon of war. In this respect, the Royal Navy's "Air Service" truly was the British Fleet's "Air Arm", and the Navy's "Engineers" were now required to understand, operate, repair and maintain all of her equipment under Admiralty regulations proscribed in the "Steam Manual". While the Navy no longer "Sailed" the seas, and reciprocating steam engines had given way to "Steam Turbines" the principle behind understanding what was going on remained - and still remains, the same.

Prior to WW1 the British Empire, like many nations, had 2 "Arms" or military forces - a Naval Arm (Navy) and an Land Arm (Army), both of which used "Aerial Machines" in different ways. The "Forces of the day" believed that "aeroplanes were for Observation and Co-ordination" however fixed wing aeroplanes with limited range and their inherent susceptibility to corrosion were not a menace at sea, the Air-ship with long range and the ability to ascend above the range of guns - was. Src - British rigid air-ship pg 5 .

### SECTION NOTES:

**CANADIAN AVIATION - 1913**

1913, Montrose Airfield is the first operational base built for training of pilots for the RFC, the first of its kind in Britain. RFC flying training schools experience frequent crashes as they build up a force of skilled pilots.

06 August 1913 : Victoria, British Columbia, Canada first fatal airplane accident in Canada occurred when American barnstormer, John M. "Johnny" Bryant, California aviator is killed flying his personal Curtiss Bi-plane seaplane. In the morning he flew from the Willows to Cadboro Bay and landed on the beach there. He had the wheels removed and replaced with seaplane floats, making his next flight the first seaplane flown on the waters of British Columbia -Taking off into gusty conditions he tested the planes water landing ability by landing at the mouth of the bay, then took off and headed to Victoria. As he approached, there were 20,000 anxious fans scanning the skies. When they spotted the little airplane they broke into wild cheers - That evening, about 5:30, Johnny took off from the harbor for another flight over the city. After circling the harbor he flew to the business section of Victoria. After flying at about 800 feet over the city for 5 minutes, he began a steep dive. The dive continued, faster and steeper until he was 200' over the city, then onlookers saw the right wing collapse. He crashed into the roof of the Lee Dye Building and was killed instantly. Detective Heather, Motor Constable Foster, and Constable McLellan were watching in the crowd. - His wife Alys McKey (married May 29 1913) learned to fly and also trained as a mechanic by Spring of 1913 she is reported to have become an expert pilot, with a reputation for being a "daring flyer!" - Bennett Aero Company - Before going into Canada, she set an altitude record for women of 2,900 ft above the ground. On July 21st, she became the first woman to pilot an airplane in Canada, at Minoru Park, Lulu Island, British Columbia. Alys and Johnny were welcomed into Canada by an excited crowd, anxious to see them both. At the time Johnny was hailed as one of the most outstanding exhibition pilots, and they had never seen a female pilot, let alone one who would perform 'stunts' in the air! Alys had been watching the performance from the Department of Marine Building. The accident plunged her, and all of Victoria, into grief. She never flew again. John Bryant was "one of the best airmen" of that era and had done "a great deal of exhibition flying" prior to coming to Canada.

1913 : The Daily Mail (UK) offers £10,000 for the first "Trans-Atlantic" flight. UK War Office contracts Handley Page to build 5 aircraft to win the prize. Handley Page designs the L.200 to win the prize.

17 April 1913 : Desmond Lucius Studdert P. P. Arthur joins No. 2 Squadron RFC, Montrose Scotland.

27 May 1913 : Right wing of Lieutenant Desmond Arthur's B.E.2 biplane (ser. no. 205) collapses without warning at 2500 feet over Montrose during a routine training flight from Upper Dysart to Lunan Bay.

1. Not wearing a seat-belt, Lieutenant Arthur is thrown from the aircraft .
2. Killed instantly, Lieutenant Arthur was found 160 yards away from the wreckage of his machine.
3. Lieutenant Arthur's death in an accident was one of the first to occur in the Royal Flying Corps
4. Lieutenant Arthur's death was the first at Montrose.
5. Lieutenant Arthur's death was the first in Scotland
6. Lieutenant Arthur's was the first Irishman to die in an air-accident.

21 June 1913: the Accidents and Investigation Committee of the Royal Aero Club found that the accident causing Lieutenant Arthur's death had occurred because of the incompetent repair of a broken spar by an unknown mechanic. It was believed that the damage to the aircraft had been accidental, and shoddily repaired to prevent detection prior to the aircraft being transferred from Farnborough to Montrose.

11 July 1913 : government inquiry opened into Lieutenant Arthur's death.

1913 : Royal Navy commissions seaplane carrier "Hermes".

1913 : Royal Navy begins building a chain of coastal air stations around Britain.

February 1913 : The Admiralty Purchases Aircraft at the Aero Show. The Admiralty, under Winston Churchill made several purchases at the Aero Show including a Short seaplane, one Avro and two Bristol tractor biplanes, a Vickers pusher biplane, Sopwith-Saunders flying boat and two Sopwith three-seater tractor biplanes.

March 13, 1913: Trenchard Wins British Pilot Brevet. The Royal Aero Club granted Major Hugh Trenchard (1873-1956) his brevet on 13 March 1913 (pilot's certificate No.270).

April 15, 1913 : 1st Schneider Trophy. M. Jacques Schneider presented a trophy for competition amongst pilots of seaplanes. The first contest which took place on 15 April, was won for France by M. Prevost flying a Deperdussin (160hp Gnome).

## Notes on "Civil Aviation"

August 7, 1913 : Cody's new biplane design collapses in the air above Laffan's Plain - killing the pilot - Cody.

September 1913 : UK Military Aviation Control Transfer. The control of military aviation is transferred from the Master-General of Ordnance to a new 'Department of Military Aeronautics' in command was Director-General, General D Henderson.

1900-1914 : Before the war "air-worthiness" did not exist as a distinct branch of aeronautics.

1913 : flying prohibited within five miles of Charing Cross - no steps were taken to "ensure safety in flight".

1914 - 1918 : During the war the seeds of "air-worthiness" were sown by the military (Service) branches using "Air-Craft"

1914 - 1918 : British Royal Navy Admiralty and Royal Army War Office departments assigned the duty for formulation of equipment & munitions specifications evolve the concept of "Air-Worthy" for aircraft as weapons of war.

1914 - 1919 : "Air-worthiness" concept means considerably more than the modern concept.

1914 -1919 : "Air-worthiness" means that aircraft design calculations were carried out by the Service department concerned.

1914 -1919 : From drawing board concept to end product, Aircraft Construction was inspected by Government officials.

End 1913 : Airship (research / design / construction?) transferred from Royal Aircraft Factory (Raf) to the Royal Navy. Admiralty "heavier than air "craft contracts being awarded to Messrs A V Roe, Short Brothers and Sopwith.

End 1913 : Royal Aircraft Factory (Raf) now devoted to research and invention of "heavier than air "craft for the RFC.

### Aircraft Production, Acceptance and Repair :

On the outbreak of the war, Napier and Rolls Royce were contracted by the Air Dept. of the Royal Navy (RNAS) to build high horsepower water-cooled aero-engines (250 HP R.a.f 3). The Royal Aircraft Factory technical experts provided as much data as possible as well as copies of the then existing drawings. Napier adhered to the R.a.f design, but Henry Royce had other ideas and started from scratch. This marked the beginning of a long line of Rolls Royce engines for use in aircraft and it was thought essential that their names should have generic continuity.

The names of birds of prey were thought suitable with the first RR military aero-engined "Eagle".

### The Royal Aircraft Factory:

Technical department for Royal Army and Royal Navy air-craft research and design services.

manufactured aeroplanes and aero-engines.

repaired aeroplanes and aero-engines.

provided spare parts for aeroplanes and aero-engines.

The Admiralty made comparatively little use of Raf air-craft research and design services

The Admiralty developed an independent technical branch for air-craft research and design.

on the outbreak of war, the Royal Aircraft Factory was entirely under the control of the Director-General of Military Aeronautics.

For the first two years of war much pioneer work in design, both of aeroplanes and engines was carried out at the Royal Aircraft Factory.

December 1913 : The Aeronautical Inspection Department (AID) is for the purpose of inspecting aircraft and other supplies for the Royal Flying Corps (RFC).

The department was immediately organised into two main technical branches dealing with the inspection of aeroplanes and engines respectively, each under the control of an Inspector.

The headquarters of the department were temporarily established in a private house - "Ashdean, - Alexandra Road, Farnborough Common" for receipt of machines delivered by private contractors for erection and final flight tests as laid down in their contracts.

At that date the establishment staff totalled 28.

The scope of the inspection carried out by AID in 1913 comprises not only aircraft but supplies of many other kinds utilized by the Flying Service, such as balloons, hangars, tents, machine tools, raw materials, fabrics and a variety of general equipment. In the

## Notes on "Civil Aviation"

inspection of these multifarious supplies almost every trade was dealt with, and some idea may be formed of the department's technical requirements when it is realized that "detailed inspection" was made not only of all materials, but also of the manufacturing process to which they were subjected, of the assembly of various parts into component units and of the erection / assembly of the aircraft, engines, etc.

The Headquarters organisation was divided into sections, each containing officers specialising in its particular branch of engineering or science. The external organisation was on a geographical basis, the country being divided into districts each under the control of a district officer responsible for the entire conduct of inspection throughout his territory.

**ROYAL ENGINEER TRAINING - 1914**

The training of the "Signal Service" is not included in the Royal Engineer Training Manual, except as regards the depot training of recruits.

PEACE TRAINING:- The object of training.

1. The immediate object of all training is the preparation of the officer, the man and the unit for the duties which will be required of them in war, and this object must be kept in view in every detail of the instruction.
2. " The full power of an army can be exerted only when all its parts act in close combination."f Engineers assist the other arms by applying the special training which they receive according to the requirements of the military situation. The training of engineers is therefore of a two-fold nature. They must be trained in their technical duties, and their general military knowledge must be so developed that they can apply their technical knowledge effectively. A proper balance must be maintained between these two requirements.

**INDIVIDUAL TRAINING**

4. The recruit officer.

1. The training of the officer may be considered under two headings :

—

- i. General military training,
- ii. Special technical training.

These two portions of his training are of equal importance, the one being complementary of the other.

2. The recruit officer's course at the School of Military Engineering is designed to develop his military instincts and to lay the groundwork of his technical training.

It will therefore include :

—

- i. The course of general military duties and training laid down for recruit sappers (Sec. 5).
- ii. General theoretical instruction in the tactics of all arms,
- iii. Practical instruction in elementary infantry tactics as laid down in " Infantry Training."
- iv. Fortification, including field engineering,
- v. Construction,
- vi. Survey and reconnaissance,
- vii. Electricity,
- viii. Workshops.
3. The recruit officer must be taught from the first that engineers exist only for the assistance of the principal fighting arms in certain technical matters, in which cavalry, artillery, and infantry are not required to have the special knowledge and skill of engineers.

5. The recruit sapper and pioneer.

1. The training of recruits should begin immediately they join, and should be carried out under carefully chosen officers and non-commissioned officers. The course for the recruit may be considered under the following headings :

—

- i. The test of trade,
- ii. Military duties and training.

## Notes on "Civil Aviation"

- iii. Musketry,
- iv. Field works.

The whole course will occupy about 29# weeks.

2. On joining, all dismounted recruit sappers will be tested at their trade in accordance with " Royal Engineers—Corps Memoranda."

The recruit mounted sapper.

1. The recruits' course for mounted sappers will include ;—

- i. The test of trade,
- ii. Military duties and training,
- iii. Musketry,
- iv. Field works.

2. The trade test will be carried out in accordance with " Royal Engineers—Corps Memoranda " as soon as the recruit joins.

The recruit driver (where R.E Air Branch recruit Pilots were placed) .

1. The recruit driver's course will include—

- i. The development of a soldierly spirit,
- ii. Squad drill, with and without arms. (See " Infantry Training.")
- iii. Physical training,
- iv. Instruction in routine duties, cleanliness, smartness, orders, and the necessary regulations.
- v. The care of arms, visual training, and ranging,
- vi. Riding drill,
- vii. Driving drill.
- viii. Recruits' course of musketry.
- ix. Swimming.
- x. Hygiene.

### CANADIAN AVIATION - 1914

1914 : The popular reaction to the outbreak of World War One can be seen as evidence that the schools had done little to train critical faculties.

The patriotic curriculum delivered exactly what was required of them, wave upon wave of volunteers for the armed services.

In 1914, Britain was alone of the major protagonists to not require Conscription. So many volunteers heeded Kitchener's Call to Arms that it could be put off until 1916.

Even then, it was largely due to the efficiency of the Killing Fields in France that more manpower was required.

25-30 August 1914 : "National markings" applied to Royal Flying Corps aircraft, when Union Jacks were painted on the under surface of lower wings .

October 1914 : the British adopt the concentric circular "target" introduced by the French, but the colours were reversed .

[the "RCAF roundel" with a maple leaf as the central device was only authorized during the Second World War, but did not appear as standard nationality marking for Canadian aircraft until after the war ended.]

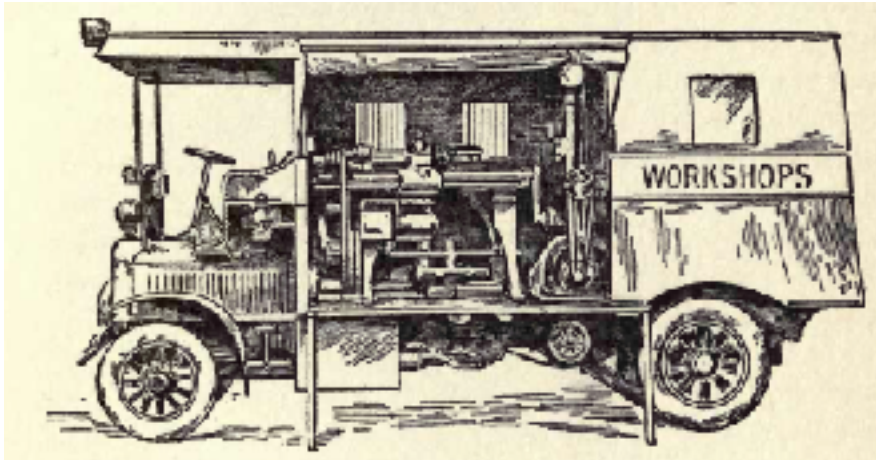
1914 : Not only the fighting aeroplanes, but the general equipment of the air-fleet, will play a part in the aerial battles of the future.

1. The organisation of a squadron of machines for war-in-the-air is found to be "surprisingly intricate", and little is known.
2. There must be trained mechanics in large numbers,

## Notes on "Civil Aviation"

3. The trained mechanics must be driven from place to place in motors, according to the movements of the aeroplanes they serve.
4. Then the aeroplanes, if necessary, must be dis-assembled, packed on lorries and taken across country by road
5. there must be portable sheds [hangars] upon the landing grounds, in which the aeroplanes may be housed at night.
6. There also needs to be:
  1. A supply of spare aeroplanes, and
  2. A supply of spare parts, and
  3. A number of travelling workshops with skilled engineers,which can be rushed from place to place for the repair of damaged aeroplanes.

A sketch of one of the "workshops on wheels", *which are vital to the organisation* of the RFC, is illustrated below <sup>63</sup>



1914 : Britain and her Dominions maintained but three soldiers out of every 2,600 of the population; Germany, on the other hand, maintained 26 out of every 2,600 of her population. August, 1914, the British Army consisted of 250,000 Regulars and 200,000 Reservists. Britain had also a force of 250,000 Territorials (partly trained volunteers). With this force of 700,000 she had to guard the Homeland and India. 1914- ROYAL NAVAL AIR SERVICE OFFICERS a MEN = 800. ROYAL FLYING CORPS OFFICERS & MEN 100

a pilot has confidence

in the machine he flies. He knows it is strong as a whole ; that it has no hidden weakness or faulty spar ; that he may rely upon it implicitly, even under the acutest strain.

The building of an aeroplane is a problem of great difficulty such a problem, in fact, as no other designers of craft, either for land or sea, are called upon to face.

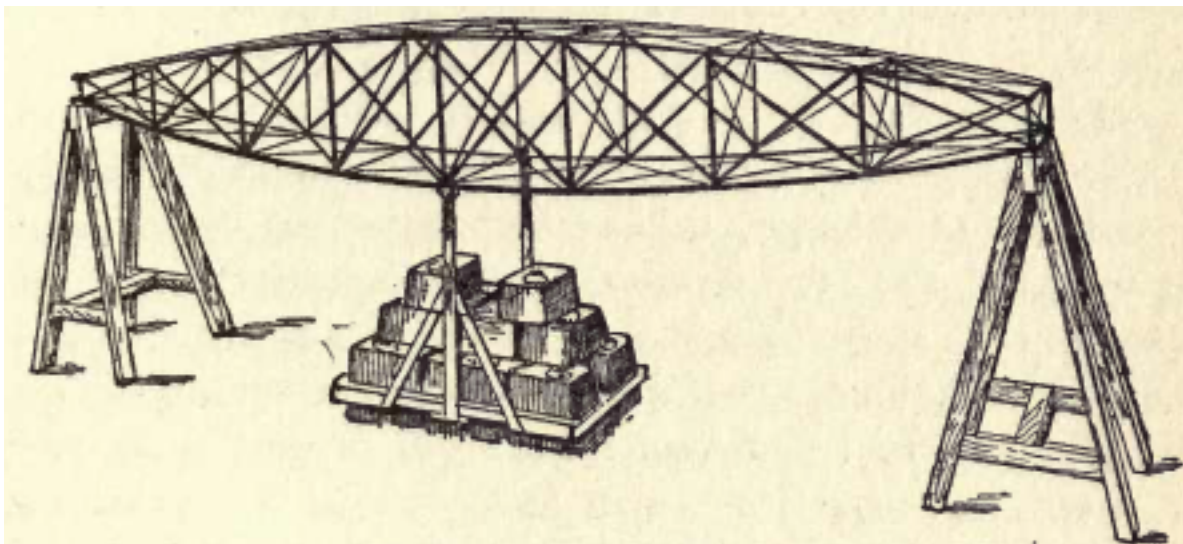
The machine must be immensely strong, and yet it is essential that it should be light. Its planes cannot bear through the air more than a certain number of pounds per square foot ; and so if it is to be a practical craft, and raise a useful load, every pound that can be saved

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<sup>63</sup> THE AEROPLANE BY CLAUDE GRAHAME-WHITE AND HARRY HARPER

## Notes on "Civil Aviation"

in its construction has a definite value. It is because such work is so intricate that there is special interest in a visit to an aeroplane factory. Here, in large, well lighted workrooms, are skilled craftsmen employed. Some of the men, now risen to be foremen of their departments, made their first acquaintance with aviation in the very early days. Then there were no factories, and an inventor, regarded invariably as a "crank," found a mechanic who was intelligent to help him, and built his craft humbly in some outhouse or shed. Now these handy mechanics, who perhaps forsook a post in a motor works to join some "scheme" (Programme) to build an aeroplane, find themselves in positions of trust in a large and flourishing factory turning out aircraft for Governments and for private use, and with a staff of workers under their control. Source: The Aeroplane - Graem White 1914



Put together scientifically and from sections of wood specially tested, a remarkable strength may be obtained by such a method of building. When the wings of a machine are ready and have been sheathed with their fabric, and when its hull and chassis have been built, it finds its way into the assembling shop. The motor is bolted in its framework, the propeller fitted, and the whole construction receives a final overhaul. And then one morning it is wheeled out upon the aerodrome its planes spotless and gleaming in the sun and is tested for the first time in flight. In many cases, so great has been the progress in aeroplane building, that a new machine will do just what its designer intended it should; there is no longer any doubt as to the craft's ability to take the air. But minor adjustments have usually to be made, none the less, before a machine is delivered to its purchaser; and in the case of a war machine, bought, say, for the Admiralty or the Army, it needs to perform prior to being taken over a series of special tests. It must show that it can ascend rapidly and fly at a certain



## Notes on "Civil Aviation"

speed, and it must raise a specified weight of fuel, in addition to that of its pilot and passenger. The War Office has prepared a list of its requirements for military machines of different types ; and aeroplane builders, if they plan craft for Government acceptance, must be prepared to submit them to the trials arranged. A light scouting machine, when it is tested, must be able to lift its pilot and fuel sufficient for a flight of 300 miles, and it needs to vary its speed from 30 to 85 miles an hour. Larger machines, built for scouting, have to carry the weight of a pilot and observer and 80 lbs. of wireless apparatus ; while a craft to be used in fighting must raise in addition to its crew the weight of a gun and ammunition ; this is estimated to represent 300 lbs. What the maker usually does, when a craft intended for the Government has been built and given a preliminary testing, is to send it by way of the air either to Farnborough, where the Royal Aircraft Factory is situated, or to Eastchurch, in the Isle of Sheppey, where the Royal Naval Air Service has its headquarters

January 2, 1914 : UK War Office - Army Orders announce the formation of the Aeronautical Inspection Department (AID) - RFC under the command of Major JDB Fulton as a result of accidents involving Deperdussin biplanes, Cody biplanes, and Bristol monoplanes in 1912 & 1913. New aeroplanes and engines were delivered by road to Royal Aircraft Factory - Farnborough for erection and flight test prior to acceptance by the AID. A vital factor involving the department was in assuring "increased security" in the air. "Standards of safety" for air-craft were laid down by the AID and soon adopted by private industry. The AID imposed stringent standards which greatly reduced the number of casualties amongst pilots and air-men.

The United Kingdom War Office - Ministry of Munitions, long responsible for control of precise gauging of rifle / gun bores, ammunition and similar articles issued to H.M Forces, mandates the AID laboratories to:

1. Ensure aeronautical items manufactured / purchased / used by H.M Forces are engineered to be interchangeable,
  2. Ensure aeronautical items manufactured / purchased / used by H.M Forces are of a suitable safety standard,
  3. Undertake material development for specification of aeronautical items manufactured / purchased / used by H.M Forces
  4. Conduct raw materials - testing : wood, wire and fabric, steels, alloys, etc..
- C. Conduct testing of engine:
- A. component parts
  - B. gauges
  - C. accessories
  - D. fittings
  - E. electrical equipment
- D. Conduct testing of airframe:
- A. component parts
  - B. gauges
  - C. accessories
  - D. fittings
  - E. electrical equipment

## Notes on "Civil Aviation"

### E. Metallurgy development:

1. High strength steels in cast and wrought forms,
2. stainless steels in cast and wrought forms,
3. light-weight alloys in cast and wrought forms,

### F. Identify problems with the inspection of these myriad items and develop inspection and testing techniques to ensure compliance with standards developed for the Ministry Munitions.

11 April 1914 : Aircraft Park. S. Farnborough.—Repair work on aircraft and mechanical transport was carried out in the workshops, and the technical training of recruits was continued. Source : ROYAL FLYING CORPS (MILITARY WING). WAR OFFICE summary of work for week ending April 11th, 1914

18 April 1914 : A Belgian Fatality : While making a first trial flight on a new biplane at the St. Jo aerodrome, near Antwerp, on the 8th, the Belgian pilot, Francois Verschaeve, fell from a height of about 1,000 metres, and was instantly killed. It is believed that a part of the wing-warping mechanism failed

Double Fatality in Germany : While flying at the Kaditz aerodrome at Dresden, on the 10th, something went wrong with one of the wings of a machine piloted by Hermann Reichelt, and it fell from a height of 500 metres. The passenger, Fraulein Steglitsch, was thrown from the machine and killed instantly, while the pilot was so severely injured that he died in hospital a few hours later. It may be recalled that last autumn Reichelt made a flight from Berlin to Paris.

An Italian Fatality. WHILE Lieut. V. Grifla was flying over the Mirafiori Aerodrome at Turin on the 31st ult., the machine side-slipped, and fell from a height of 40 metres. The unfortunate pilot was killed instantaneously.

April 20, 1914 : 2nd Schneider Trophy Contest. The second contest for the Schneider Trophy took place and was won for Britain by civilian pilot Howard Pixton flying a Sopwith Tabloid (100hp Gnome) fitted with floats. The trophy is intended to encourage design and development of seaplanes and flying boats

1 January 1914, No. 2 Squadron of the Royal Flying Corps moves from Upper Dysart to Broomfield Farm.

Test flying as a systematic activity started during the First World War, at the Royal Aircraft Establishment (RAE) in the United Kingdom. An "Experimental Flight" was formed at the Central Flying School. During the 1920s, test flying was further developed by the RAE in the UK, and by the National Advisory Committee for Aeronautics (NACA) in the United States. In the 1950s, NACA was transformed into the National Aeronautics and Space Administration, or NASA. During these years, as work was done into aircraft stability and handling qualities, test flying evolved towards a more qualitative scientific profession. In the 1950s, test pilots were being killed at the rate of about one a week.

1914 M.P. William Joynson-Hicks complained of a "whitewash" re Lieutenant Arthur Arthur's death and that the Secretary of State for War Colonel Seely would not admit to the faulty repair.

When you try to unravel how the "Great War" and Aviation Maintenance-Engineering started, it is actually somewhat of a mystery - not many people know the full details....

28 June 1914 : Sarajevo, Bosnia-Herzegovina, a teenage Serbian named Gavrilo Princip assassinates Archduke Franz Ferdinand, heir to the Austrian throne.

1 July 1914 : UK admiralty withdraws its aerial resources from the RFC. Royal Naval Air Service (RNAS) created.

What had changed from 1914?

In the summer of 1914, few Canadians would or could have been aware that the spark set off by Prinzip would be one of a number of events that would lead to massive losses of life over the next four years.

Canada was essentially a British Colony in 1914,  
Britain was tied to some very serious agreements with other nations, particularly France.

## Notes on "Civil Aviation"

Although "Britain had no formal alliance with either side, no one in Canada knew that she did have these informal military understandings with France, and they were to prove almost equally binding." (Source LCol D.J. Goodspeed, *The Armed Forces of Canada 1867-1967*, Directorate of History, Canadian Forces Headquarters, Ottawa, 1967, p. 29.)

June 1914 : RFC Splits in Two. The RFC was split in two during June 1914, when the Admiralty announced the formation of the Royal Naval Air Service (RNAS), consisting of the Air Department (Admiralty), the Central Air Office, the Royal Naval Flying School, and the Royal Naval Air Stations.

June 28, 1914 : Archduke Franz Ferdinand, heir to the throne of the Austro-Hungarian Empire is assassinated in Sarajevo, Bosnia.

23 July 1914, "Austria, supported by Germany, served a harsh ultimatum on Serbia

July 28, 1914 : Austria-Hungary declares war on Serbia

28 July 1914 : Austria and Germany declared war.

30 July 1914 : Russia mobilizes to support Serbia.

01 August 1914 : Germany declares war on Russia

03 August 1914 : Germany declares war on France.

03 August 1914 : Italy supportive of Germany and Austria in a defensive war only, remains neutral.

04 August 1914, Britain declares war on Germany in defence of Belgium

04 August 1914 : Canada as part of the British Empire (there is no distinction) is now also at war with Germany.

May 1915 : Italy declares war on Germany and Austria.

(Source LCol D.J. Goodspeed, *The Armed Forces of Canada 1867-1967*, Directorate of History, Canadian Forces Headquarters, Ottawa, 1967, p. 29.)

Basically, a couple of disparate groups began to play the very ancient and unfortunate game of "you fight me, you fight my gang." As Europe rushed to arms, Britain mobilized its fleet. Germany invaded Belgium, whose neutrality had been guaranteed by Britain as well as Germany, and on 04 August 1914, Britain declared war on Germany. In 1914, when Britain was at war, Canada was also at war; and there was no distinction, although Canadians believed at the time that Britain's cause (in defence of Belgium) was just. Most however, genuinely believed that the war would be over before they could take part in it.<sup>64</sup> (Source LCol D.J. Goodspeed, *The Armed Forces of Canada 1867-1967*, Directorate of History, Canadian Forces Headquarters, Ottawa, 1967, p. 29.)

July 1914 : USA : "SAFE AND SANE" MACHINES FOR ARMY AND NAVY.

The first Burgess- Dunne machine has been shipped to the United States Navy from the Burgess works at Marhlehhead and the one for the Army will be delivered within a few weeks. This Government will be the first to own one of these inherently stable machines and its undoubted success in the Army and the Navy will be watched with interest by all.

The Burgess-Dunne seaplane was recently converted into a land machine and a number of flights made with it on the old Squantum field near Boston. Flight after flight was made by Mr. Webster running over the field and leaving the ground without any guidance whatsoever, the controls being locked. It climbs well over 300 feet per minute and its balance in the air is quite as good as with the boat attachments which were transferred back onto the machine in just an hour and forty minutes, when the machine was flown to Marhlehhead, a distance of 18 miles, in ten minutes—naturally with a strong wind. ( AERONAUTICS, July 31, 1914)

July 1914 : USA : "WHAT AMERICAN AVIATION NEEDS" :

Support by the public.

Support by the Government.

Federal control of flying. (For years urged by AERONAUTICS.)

Endowed aeronautical laboratories.

Aeronautical engineering courses in technical colleges.

Scientific construction methods.

Improved motors.

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<sup>64</sup> LCol D.J. Goodspeed, *The Armed Forces of Canada 1867-1967*, Directorate of History, Canadian Forces Headquarters, Ottawa, 1967, p. 29

## Notes on "Civil Aviation"

Before the Committee on Military Affairs last fall Colonel Reber said "Congress has not appreciated the importance of or given adequate support to military aviation. On the other hand, the great nations of Europe have realized its importance and France has led the world in its utilization.

Aviation has appealed more strongly to the imagination and esprit of the French people than to the rest of the world. This nation, seeing an opportunity of increasing its military strength over that of its neighbors, who have not been so prompt to realize the utility of aviation, raised large sums of money by popular subscription for the purchase of aviation material for the army and public opinion has forced the government to support and develop the fourth arm of the French army.

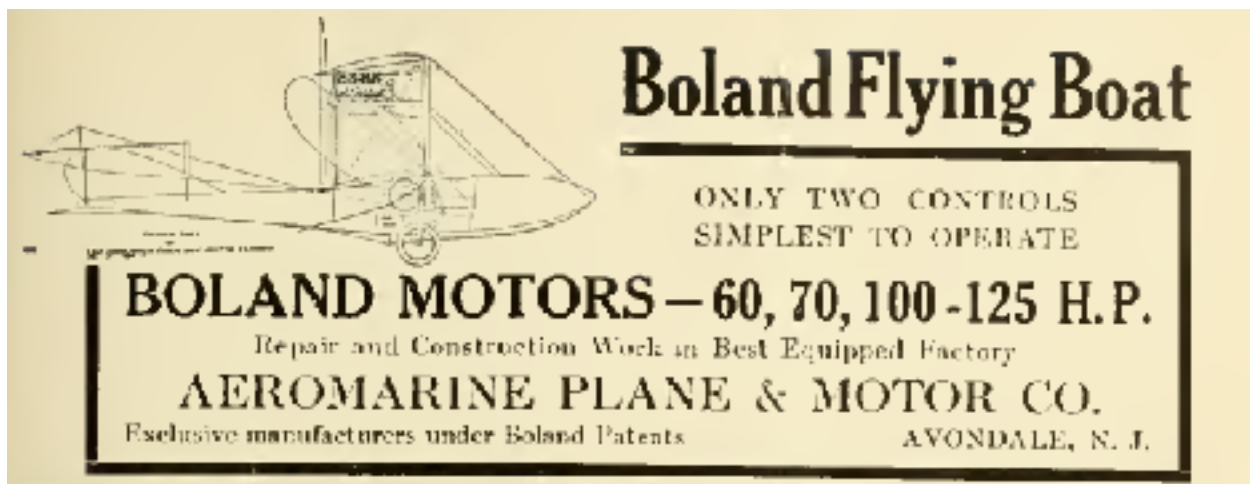
The French and English governments have for the past two years given direct support and encouragement to manufacturers by money awards at military trials, and subsequent orders for the machines winning in the trials. "Experience, experiment and application of engineering principles have advanced the construction of the aeroplane far beyond the pioneer machines of our chief inventors.

Judging, however, from the large number of freak machines that are to be seen in the hangars around our aerodromes, there is no general realization that the correct design of an aeroplane calls for a new branch of engineering—aeronautical engineering—which embraces physics, mechanical engineering, meteorology and even marine engineering and naval architecture.

It is to be hoped that the day will soon come when the carpenter shop or backyard will no longer serve as a factory nor the would-be constructor obtain his plans from an octavo volume on 'How to Build an Aeroplane,\* or from the pages of an aeronautical journal. The number of imitators of successful designs is great, but the really competent designer is a 'rara avis' in this country." (AERONAUTICS, July 31, 1914)

July 1914 : England : BRITISH LABORATORY REPORT : The technical report for 1912-13, the fourth of the series, of the British Advisory Committee on Aeronautics has just been published. The report summarizes the work undertaken, and detailed particulars are given. The investigations cover general questions in aerodynamics, experiments on wind channels, including description of the new 4-ft. wind channel at the National Physical Laboratory ; experiments on models of wings, bodies, etc. ; models of complete aeroplanes; stability, efficiency of propellers, strength of construction; hydro-aeroplanes and design of their floats; fabrics, researches on alloys, etc. The volume contains over 400 pp.. with many plates, and is published by Wyman & Sons, Fetter Lane, London, E. C.; price, US \$2.43. (AERONAUTICS, July 31, 1914)

July 1914 : Sets of detailed working drawings for the Latest type of the MORANE-SAULNIER are offered for sale at US \$200. Sale exclusive. The Morane-Saulnier holds the best records for cross-country and speed flying. The "Owner" of the drawings can superintend construction of the aircraft. Address A. F., care of : AERONAUTICS, 250 W. 54th St., New York.



**Boland Flying Boat**

ONLY TWO CONTROLS  
SIMPLEST TO OPERATE

**BOLAND MOTORS — 60, 70, 100-125 H.P.**

Repair and Construction Work in Best Equipped Factory

**AEROMARINE PLANE & MOTOR CO.**

Exclusive manufacturers under Boland Patents

AVONDALE, N. J.

## Notes on "Civil Aviation"

03 August 1914 : Paris, France : French aviator, Roland Garros drives his aeroplane headfirst into a German air-ship which ignited and burned, killing himself and the 25 man crew of the air-ship. ( AERONAUTICS - AERONAUTICS PRESS INC. 250 West 54th Street New York Telephone, Columbus 8721 Cable, Aeronautics, New York July 31, 1914. pg 22 ERNEST L. Jones - Editor)

04 August 1914: British Empire's Declaration of War with Germany.

04 August 1914 : Paris: German army aeroplane reported to have dropped three bombs on the garrison town of Luneville, killing fifteen persons. Three German dirigibles reported maneuvering over Brussels. Numerous aeroplanes from French aviation centers said to be flying over Paris in flotillas of twos, threes and fives toward Germany. German dirigible supposed to have dropped explosive on a French town, annihilating a patrol of troops. ( AERONAUTICS, July 31, 1914. pg 22)

06 August 1914 : Brussels : German aeroplane and Zeppelin dirigible reported destroyed by Belgians. A personal conflict is reported between a Belgian and a German aviator who fired revolvers at each other and then vol-planed (glided) to the earth.

There are no less than 105 airships, from the "vedette" type to the "monster Zeppelin" reported under construction by the belligerent nations ( AERONAUTICS, July 31, 1914. pg 22)

On the outbreak of war, a detachment of the RNAS was sent to Belgium and airship and seaplane patrols were instituted between the East Coast of England and the Belgian coast. All available pilots and aircraft of the RFC proceeded to France with the British Expeditionary Force.

All available pilots and aircraft of the RFC proceeded to Farnborough. Here the squadrons were made up to full strength with aeroplanes and transport from many sources including the CFS, before moving to the embarkation points. RFC squadron aircraft types on strength at the outbreak of WWI was as follows:

No. 2 Squadron - BE 2

No. 3 Squadron - Bleriot's & Henri Farman's

No. 4 Squadron - BE 2

No. 5 Squadron - Avro, Henri Farman and BE 8's

August 8, 1914 : The first 'Defence of the Realm Act [DORA] passed by UK Parliament.

15 August 1914 : "aeroplanes seem to be fulfilling the promises made for them by military experts" . Zeppelins will do remains to be seen as they have evidently been kept under cover thus far for some definite purpose. "A scouting aeroplane carries two officers, one as pilot, the other as observer. The officer observer carries a photographic apparatus, and in many cases remarkably clear pictures of the enemy's positions have been secured from dangerously low altitudes. French aerial scouts have taken amazing risks in this respect, 1 flying well within the range of hostile rifles in order to insure accurate observations. Generally speaking, German officers engaged in similar work have flown at greater altitudes. Successful as the aeroplane has been for reconnoitering, its value as an instrument of destruction has proved practically nil. Judging from the experience of this campaign, the use of aeroplanes will be limited to scouting, and not be extended to actively offensive operations. This applies, at any rate, to the aeroplane in its present form. In many cases German military aviators have endeavored to disguise themselves as Frenchmen, sometimes by displaying a conspicuous tricolor of France on their machine." Franco-German miscellaneous cables tell of the frontier being patrolled by rival aeroplanes within easy sight of each other, of a Zeppelin having zipped over Liege during the bombardment, pursued by a Belgian aviator who lost his life in destroying it, after which the Germans confining their activity here to aeroplanes for scouting, several being destroyed by shots from the forts; of a French aviator reconnoitering the Germans from Belfort and returning with valuable information, the machine riddled with holes; of a report from St. Petersburg telling of the destruction of a German Parseval non-rigid entailing the loss of four; of a German dirigible sailing over Liege and dropping several bombs in the city, killing 17 civilians and firing several buildings, with two Belgian aviators in fruitless pursuit; of bombs dropped on the railway station at Nainur, Belgium and on a bridge, without great damage. A Zeppelin dirigible is reported hit and destroyed by Belgian gunners, using an explosive shell. A Zeppelin dirigible is reported hit and destroyed by Belgian gunners, using an explosive shell. Many German aeroplanes sighted along the border and French aviators flying across the line quickly pursued by overwhelming numbers of German "planes and driven back. One German aviator is reported to have flown over the Vosges mountains and dropped bombs in Vesoul, the capital of a department of France, returning safely. Two Belgian aeroplanes give chase to a German aeroplane scout who was flying above the Belgian fortified position on the Meuse, the result being hidden by the darkness. Two German aeroplanes follow a French aviator and shoot at him unsuccessfully. Servians are said to be using aeroplanes to reconnoiter Austrian operations. Two German aviators were fatally hit and the third seriously wounded, while their machines were wrecked. The German airmen were reconnoitering the Belgian trenches at Diest. Small bombs dropped from aeroplanes seem to do little damage. Many of these reports are printed again days later with changes. No authentic information is available. France is reported to have acquired a German aeroplane factory by the capture of Mulhausen. French reports say a German aviator was brought down by hitting the motor and made a prisoner of the

## Notes on "Civil Aviation"

pilot and observer. Pistol duel in mid-air between French and German aviators with no results reported. German aviators drop bombs in the department of the Meuse but injure no one. A French family receives a letter telling of the destruction of a Zeppelin by bombs from a French aeroplane flying above it. Russians are reported to have brought down a German aeroplane with four aboard, all being killed. An airship, supposedly German, was seen over the North Sea from Amsterdam, Holland. Two German aviators killed and one seriously wounded by Belgians is the report on the German reconnaissance of the Belgian lines. "The guns that were especially designed to destroy aeroplanes have more than fulfilled their mission and the marksmanship of the Belgians has been wonderful. On the other hand the Krupp aero guns used by the Germans have all but proved useless. They were used against the Belgians at Liege, but in nearly every instance it developed that their range was too limited for them to do any real damage.

### AEROPLANES ARE CONTRABAND

Great Britain's contraband of war proclamation places arms, ammunition and all distinctly military supplies on the list of "absolute" contraband. "Aeroplanes, airships, balloons and aircraft of all kinds and their component parts, together with accessories and articles recognizable for use in connection with balloons and aircraft are among contraband material."

GOODYEAR BALLOON LANDS IN ONTARIO : The Goodyear balloon that left Akron August 1 at 10 p. m., in charge of Pilot R. A. D. Preston, who won the national balloon race, and carrying Williard Seiberling, son of F. A. Seiberling, president of the Goodyear Tire and Rubber Co., and W. D. Burns, landed east of Chatam, Ontario, early Sunday morning. source - AERONAUTICS



August 28, 1914 : 2nd DORA - The second Bill of the Defence of the Realm Act is laid before Parliament in order to extend these powers to include control over armament factories and their workers.

September 1914 : RNAS Becomes Responsible for UK Home Defence. At the request of the Secretary of War (Lord Kitchener), the First Lord of the Admiralty was invited to become responsible for home defence against enemy aircraft.

16 September 1914 : Canadian Aviation Corps is formed. It consists of two officers and one mechanic, none are Pilots. One Burgess-Dunne aircraft is purchased by the Canadian Aviation Corps and shipped to England.

September 1914 : The Curtiss Model "J" and Model "J-2" tractor biplanes have been developed to meet the 1914 specifications of the United States Army, and several of the Model "J" have already been adopted and are in use by the Signal Corps at San Diego, after demonstrations by Raymund V. Morris. These models can be furnished as land machines or as hydro-aeroplanes.

#### MODEL "J," RECONNAISSANCE TYPE.

Model "J" tractor is arranged for pilot and observer, seated in tandem, and is equipped with double controls, so that either man may take charge. With Curtiss Model O-X 90-100 h.p. motor, it has an extreme flying range of from 40 to 90 miles per hour, carrying two men and four hours' fuel. Flying light, Lieut. Goodier climbed 1,000 ft. in 1 minute; fully loaded, its guaranteed climbing speed is 2,000 ft. in 6 minutes.

#### MODEL "J-2," FAST SCOUT TYPE.

Model "J-2" Curtiss tractor is a single-seated speed scout, as fast a biplane of its horse power as ever has been produced, but still substantial enough to stand up well under the stress of hard service. With Model O-X Curtiss motor, the "J-2" tractor has more of a range. The wings of both these models are of latest approved section, one piece type. Wing frames are built up carefully of ash and spruce, with beams shaped and grooved by hand, important joints copper strapped, the whole securely stayed with piano wire. Covers are of unbleached linen, thoroughly coated with our own water and oil-proof preparation. Model "J" wings have a spread of 40 ft. 2 in. for the upper surfaces, and 30 ft. for the lower surfaces; the area of lifting surface is approximately 350 sq. ft. Model "J-2" wings have a span of 24 ft., upper and lower alike, and an approximate area of 240 sq. ft. The fuselage is of rectangular section, 26 in. wide by 35 in. high at the cockpit, tapering to nothing at the rudder. The longerons are ash strips, 1 1/2 in. in



## Notes on "Civil Aviation"

diameter, tapering to 1 in. The fuselage is corner braced with nine sets of struts, which are joined with corner clamps without piercing the longerons. Each section is crosswired in three directions.

The third and fourth vertical struts are placed so as to act as wing struts, and they have extensions running to the upper surface. The streamline effect is preserved throughout by enclosing the front of the fuselage, with motor and mountings, in a cowl of Duralumin, slotted to admit air to the motor. Streamline cowls protect the cockpits and deflect the wind from the pilots, as well as shield from the weather the dashboards on which the instruments are mounted. Behind the cockpits the fuselage is covered with waterproofed linen. The Curtiss Model O-X motor is mounted on engine beds of laminated ash and spruce 2 in. x 3 in. in diameter. It is fastened in front to a plate of 3-32 in. steel, which joins the longerons, and also carries the radiator. The rear ends of the engine beds are mounted on a hardwood cross member framed into the second pair of vertical struts of extra size. The fuselage is supported by an undercarriage consisting of three supporting struts on each side, borne on two streamlined wire wheels. The tires are 26 in. x 5 in. Wheels are attached with rubber band shock absorbers.

Protection from an upset in case of an unusually hard landing is afforded by two white oak skids, 6 ft. long, turned up in front; they also help shield the propeller. The tail skid is of white oak and sprung with rubber bands. Turn-up ailerons 10 ft. in length live 2 ft. wide are attached to the trailing edge of the upper surface on Model "J" tractor. Model "J-2" has turn-up ailerons on both upper and lower surfaces. These are 7 ft. long by 2 ft. wide. The vertical rudder has an area of 30 in. x 36 in., is well secured to the stern post, and is double wired. Horizontal rudders, or flippers, have an area of 16 sq. ft. Either the Curtiss system of control, consisting of shoulder yoke and steering wheel, or the Deperdussin system, with foot bar, can be provided with these models. General dimensions are: Model "J"—Span, lower plane, 30 ft.; upper, 40 ft. 2 in.; chord, 60 in.; ailerons (2), 10 x 2 ft.; length over all, 26 ft. 4 in.; rudder area, 16 sq. ft.; flippers, 16 sq. ft.; area fixed tail surfaces, 30 sq. ft.; number passengers, 2; fuel capacity, 4 hours; speed range, loaded, 45-75 m.p.h.; climbing speed, 400 ft. p.m.; price f. o. b. Hammondsport, \$7,500; hydroplane equipment, extra, \$500. Model "J-2"—Span—Lower plane, 30 ft.; upper, 24 ft.; chord, 60 in.; ailerons (4), 7x2 ft.; length over all, 24 ft.; rudder area, 16 sq. ft.; flippers, 16 sq. ft.; area fixed tail surfaces, 30 sq. ft.; number passengers, 1; fuel capacity, 3 hours; speed range, loaded, 45-50 m.p.h.; climbing speed, 500 ft. p.m.; price f. o. b. Hammondsport, \$7,500; hydroplane equipment, extra, \$500.



30 September 1914 : USA : ENGLAND PAYS FOR USE OF WRIGHT PATENT.

The Aero Club of America has been notified that the British Government has officially recognized the Wright Brothers' patent and has paid to the British Wright Company \$75,000 in settlement for the past, present and future use of the Wright patent in Great Britain. This still leaves the patent in the possession of the British Wright Company, which can collect royalties from other users of the invention in England. This is in settlement of the sued claim for \$375,000 which has been in the British courts for the past year. (Aeronautics 30 Sept 1914 )

04 August 1914 : Canada is at war with Germany. Canadian Minister of Militia and Defence, Sam Hughes. By 1916, Hughes is in at "Caesar's Camp" Bedfordshire, England in charge of Canadians training in the pouring rain and mud.

04 August 1914 : Officer Commanding the Military Wing of the Royal Army (RFC) is tasked with creation of new squadrons. Initially a target of 12, Lord Kitchener increases this to 60.

## Notes on "Civil Aviation"

August 1914 : Malcolm McBean Bell-Irving of Vancouver pay his own way to Britain. Joins RFC, gazetted "lieutenant" in September 1914.

August 1914 : RFC recruiting - Canada

1. Officers of Canada were seconded to the RFC.
2. Enlisted men were discharged from Canadian Militia and then "re-enlisted" in the RFC under British Terms.
3. All WW1 RFC enlistees were classified as "Air Mechanics" (A.M's) and unless they earned the rank of corporal or higher - air mechanics they remained in name - even if cooks, drivers or actual mechanics.
4. Persons joining the mechanical branch RFC were allowed to chose their desired work but had to undergo trade tests at the Toronto armouries
5. British RFC experts who determined the trade suitability of the recruit. (source We are the Dead pg 206, By Larry Gray)

In formulating his ideas for aircraft technical training in the peacetime RAF, Trenchard inherited long tradition of boys service dating back long before the First World War, both in the Royal Navy and in the Army. Rapid expansion of the Royal Flying Corps during the war had generated a shortage of skilled mechanics, **47 of whom were needed to support one front-line aircraft**. In the early stages of the war the stream of volunteers entering the Army was combed for the skilled men needed to maintain the RFC's aeroplanes .

However, it was quickly realised that the fledgling air army would have to train its own mechanics if the acute shortage was to be overcome Prior to the outbreak of war, the technical training of men was carried out at the Central Flying School, Netheravon and with the growing demand for specialist skills, a number of additional schools were established. Whilst Netheravon held 200 trainees, a school at Reading held 1,000 and, from July 1916, a converted jam factory at nearby Coley Park held 2,000.

There was no basic engineering course for semiskilled recruits and 400 men were therefore sent to polytechnic schools for training. This kind of improvisation could not provide the men the RFC needed and rationalisation of the training machine became an urgent need. (Source ref : **TRENCHARD'S BRATS BLOW OUT** By Gp Capt W J Taylor OBE RAF DD Spt Pol 2 (RAF))

August 1914 : Royal (State owned) ordnance factories provide the British Army with about a third of its weapons

### **Aircraft Production, Aircraft Acceptance and Aircraft Repair :**

With airships being transferred to the Navy at the end of 1913, the Royal Aircraft Factory (RAF) from that time was devoted to research and invention of heavier than air aircraft for the Royal Flying Corps.

The Navy had pinned its faith to the civilian aircraft industry, with Admiralty contracts being awarded to Messrs A V Roe, Short Brothers and Sopwith.

Furthermore, on the outbreak of war, Rolls Royce were also encouraged to build high horsepower aero-engines. This marked the beginning of a long line of Rolls Royce engines for use in aircraft and it was thought essential that their s should have generic continuity.

The names of birds of prey were thought suitable with the first RR military aero-engined "Eagle".

The Royal Aircraft Factory existed as a technical department for both services, but the Admiralty made comparatively little use of its services and developed an independent technical branch. Thus, on the outbreak of war, the Royal Aircraft Factory was entirely under the control of the Director-General of Military Aeronautics. For the first two years of war much pioneer work in design, both of aeroplanes and engines was carried out at the factory.

SPEEDS			
Miles per Hour	Feet per Second	Metres per Second	
1	1.47	0.447	
2	2.93	0.894	
3	4.41	1.341	
4	5.87	1.788	
5	7.33	2.235	
6	8.87	2.682	
7	10.29	3.138	
8	11.76	3.576	
9	13.23	4.035	
10	14.66	4.470	
11	16.13	4.916	
12	17.59	5.365	
13	19.06	5.813	
14	20.53	6.261	
15	22.00	6.709	
16	23.47	7.158	
17	24.94	7.606	
18	26.41	8.054	
19	27.88	8.502	
20	29.35	8.949	
25	36.70	11.329	
30	43.73	13.411	
35	51.32	15.646	
40	58.68	17.881	
45	66.01	20.116	
50	73.34	22.352	
55	80.67	24.588	
60	87.96	26.832	
65	95.29	29.043	
70	102.62	31.292	
75	109.95	33.531	
80	117.28	35.769	
85	124.61	38.007	
90	131.84	40.239	
95	139.17	42.469	
100	146.60	44.701	



## Notes on "Civil Aviation"

A certain amount of manufacture was also done, including repair and the provision of spares for both aeroplanes and aero-engines. As a result of accidents involving Deperdussin, Cody biplanes and Bristol monoplanes during 1913, the Army Orders issued on 2 January 1914, announced the formation of the Aeronautical Inspection Department of the Military Wing, RFC. New aeroplanes and engines for acceptance by the AID, were to be delivered by road to Farnborough for erection and flight test. Furthermore, a vital factor involving the department was in assuring increased security in the air. Standards of safety were laid down by the AID, which were soon to be adopted by private industry and greatly reduced the number of casualties amongst pilots.

In January 1915, a "scheme" (Programme) of co-operative aircraft construction was established in Scotland with G & J Weir as the central firm. This system utilised a number of small sub-contractors for the manufacture of aeroplane parts in conjunction with final assembly of the component parts in their own works. By the summer of 1915, similar centres to that operating in Scotland had been set up in Coventry, Manchester and London. From March 1915, demand and output of new aircraft and engines increased, contractors were now required to deliver new machines for acceptance by the RFC either to aerodromes built adjacent to their own works, or to the nearest specified aerodrome. This was instead of the previous method of supplying new aircraft to Farnborough for acceptance. Under the new system, aeroplanes were erected by the firm's own staff and handed over for flight test by the pilots of the Aeronautical Inspection Department. This eventually led to the establishment of a number of Aeroplane Acceptance Parks (AAPs).

By late 1918, 27 AAPs were either in operation, or under construction. Also a number of Aircraft Repair Depots (ARDs) were established geographically to carry out major repairs to military aircraft. Good road and rail communication and proximity to industrial centres were all essential for the operation of the ARDs. Construction commenced from 1917 on new sites that were established close to an existing railway network and from this extensive railway sidings were created serving large salvage and store sheds.

A network of Decauville narrow gauge railways was also built inside the camp serving the interior of salvage, workshops and stores

### **National Aircraft Factories :**

In the middle of 1917, the sudden expansion of the aircraft programme, led to a change from the previous policy of distributing work among a large number of small producers, to concentrate instead on large production centres. Sir William Weir (the Director of Munitions in Scotland) originally proposed the transfer to the Ministry of Munitions, of the responsibility in supplying aircraft to the Army and Navy in May 1916. On 8 September 1916 Mr. Montagu (Minister of Munitions) laid Weir's proposal before the War Committee, that great skill was required to manufacture aircraft components and the production of aircraft should therefore be controlled by the Ministry - the War Committee accepted. Meanwhile a change of Government took place and the "scheme" (Programme) was accepted by Lloyd George's War Cabinet in January 1917. Weir was then appointed as Controller of Aeronautical Supplies, and his duties were to re-organise the existing Army and Navy supply sections into a single Supply Department. Weir was given a seat on the Air Board and an office in the Hotel Cecil, where the Board had its headquarters. Percy Martin became Controller of Petrol Engine Supply. On 21 February 1917, Weir's achievement as Controller of Aeronautical Supplies was awarded with a knighthood. With the new Minister's backing (Christopher Addison), Weir curtailed the designing of aircraft and aero-engines by the State at the Royal Aircraft Factory. Weir's main policy was to get new aircraft into the air while producing fewer aircraft types produced in larger factories. On the 1 March 1917, there were 55 types of aircraft in production and 33 types of engine. One year later, the number of aircraft types in production had come down to 30 and of engines, to 25. At the same time the Department had been trying to develop large production facilities rather than to spread the work among a large number of contractors.

Sanction was therefore obtained in September 1917 to fund the setting up at Government expense, of three new factories, to be operated under the control of the Department of Aircraft Production. Sites were selected at Croydon, Liverpool and Kingston, and arrangements were made for their management by Holland, Hannen and Cubitt (Croydon), the Cunard Steamship Company (Liverpool) and the Sopwith Aviation Company Ltd. It was eventually decided that the Sopwith Aviation Company should adapt the new building at Kingston (built by Dick Kerr) as an assembly shop to their adjacent factory and not as a national factory. A factory under construction in the autumn of 1917 belonging to the Crossley Motors Ltd Company, was selected instead as the third National Aircraft Factory "NAF's"

### **NAF 1 Waddon - Croydon**

Construction started: September 1917 until 13 July 1918.

Contractor: Holland, Hannen & Cubitt Ltd.

Opened: January 1918 (office staff) March 1918 (production).

Area: 198 acres.

Management: Holland, Hannen & Cubitt Ltd.

Products: 3,000 CC type interrupter gears and 241 DH. 9 aircraft.

September 1917, Holland, Hannen & Cubitt undertook the management of their factory at Waddon.

## Notes on "Civil Aviation"

The site consisted of 198 acres of flat land, but progress on construction was delayed by the bad weather and the shortage of steelwork.

By 18 January 1918, the office staff was installed and by the middle of March, part of the factory was sufficiently equipped for manufacture to begin. All building work being completed by 13 July 1918.

The factory was laid out to produce a weekly output of forty, DH 9 aircraft plus spare parts, and 600 CC interrupter gears.

The first complete aircraft was delivered during the first week of April and the total production by 31 March 1919, was 241 aircraft and 3,000 CC interrupter gears.

### NAF 2

NAF 2 Heaton Chapel - Stockport Construction started: 9 October 1917. Contractor: Unit Construction Co. Ltd and H Matthews & Sons (Builders) Ltd. Opened: April 1918. Area: 22 acres. Management: Crossley Motors Ltd. Products: Dragonfly aero-engines, 326 aircraft of the DH. 9 and DH.10 types.

Matthews & Sons started construction of the NAF at Heaton Chapel and its adjacent landing ground, on 9 October 1917 on a site covering 22 acres, but was delayed by extensive excavation required on the site.

Matthews also experienced delays in the supply of steelwork and other building materials and it was not until December, that the company were granted first-class priority for building supplies.

In July 1918, the factory was extended for the manufacture of Dragonfly engines.

Manufacture began in April of DH 9 and DH 10 aeroplanes and the total output before 31 March 1919, was 326 aeroplanes - making it the most successful National Aircraft Factory.

### NAF 3

NAF 3 Aintree - Liverpool Construction started: 4 October 1917. Contractor: Trollop and Colls Ltd. Opened: March 1918. Area: 70 acres (Stag Farm). Management: Cunard Steamship Company Ltd. Products: 126 off Bristol F2b Fighter aircraft. Notes: built next to Aintree racecourse.

About 70 acres of land next to Aintree racecourse was requisitioned under DORA and construction on the new factory began on 4 October 1917.

The racecourse itself was used as a flying ground. About 3,000 men were engaged in construction work, many were Irish labourers who in March 1918 left the country owing to the new Registration Act.

By this time, the buildings had been sufficiently built to accommodate the office staff and production of Bristol Fighter aircraft commenced several weeks later.

By 1 October 1918, only 36 aircraft had been delivered and twelve of these were without engines.

Manufacture continued after the Armistice, with the total output at the end of March 1919, being 126 aircraft.

### Oldham

**Oldham Aircraft Factory Construction started: 1 March 1918 (on new buildings). Contractor: Trollope & Colls Ltd. Original function: cotton mills at Hollinwood (Gorse Mill No.2) and at Shaw (Lilac Mill). Opened: July 1918. Management: Alliance Aeroplane Company Ltd. Products: 10 off partially assembled Handley Page 0/400 aircraft.**

June 1917, an Aircraft Production Board had been set up in America and the Bolling Commission sailed for Europe to gain information for an American aircraft programme. The mission had recommended in July, for the production of Caproni bombers and later, that consideration should also be given to the Handley-Page bomber.

In London, the Chief of Air Staff, Hugh Trenchard, devised a plan in January 1918, for incorporating American crews as well as British, thus creating an inter-Allied bombing force using Handley Page 0/400 bombers.

Contracts were therefore awarded to the Standard Aircraft Company for 500 HP bombers, most of these were to be shipped over for final assembly in Britain.

The metal fittings for 1,000 sets of aircraft were to be manufactured by the Grand Rapids Airplane Company.

Later the order was increased to 2,000, 0/400 bombers and in September, the first American-built 0/400 was delivered to the American Air Service.

A site for the final assembly of American-built aircraft, was found in Oldham, where there was a large female workforce normally engaged in the Lancashire cotton industry.

On grounds of cost, and the labour question, it was decided to requisition the Gorse Mill (No. 2), Hollinwood, and the Lilac Mill at Shaw.

It was also decided to erect a number of buildings for aircraft assembly and to provide an Aircraft Acceptance Park. The work of construction began in February, and the Alliance Aeroplane Company (Waring and Gillow Ltd.) were appointed as managers.

Progress of construction was slow and it was not until July 1918 that the first floor of Gorse Mill was occupied.

## Notes on "Civil Aviation"

The first shipments of parts arrived on 20 August and by the November Armistice, only 10 aircraft had been partially assembled.

### Airframe Components

The production of large bomber aircraft towards the middle of 1917 raised a serious problem in the supply of radiators as this type of aircraft required water-cooled engines requiring radiators of special construction.

The factory of the Motor Radiator Manufacturing Company at Greet, near Birmingham, offered several advantages for this purpose. It was already laid out for the production of tube honeycomb radiators and had the necessary plant equipment.

After negotiations to transfer the company, which belonged to a Norwegian, to an English firm, it was taken over by the Ministry under DORA.

Perhaps the most significant war-time contribution made by this company was in February 1918, when the new SE 5 aircraft then under trial had a serious reduction in top speed.

This was due to the fitting of a similar radiator to that used on the DH. 9 but when fitted to the SE 5, it produced too much drag.

Within two days a new design was despatched to Farnborough which proved successful.

As this aircraft type was urgently required at the Front, a number of courier air mechanics personally delivered the new radiators to service aircraft in France.

The demand for aircraft timber in September 1917, resulted in the provision of facilities for kiln-drying British ash timber.

Two new kilns were constructed at the works of the Great Western Railway Company at Swindon and those of the London Brighton and South Coast Railway at Lancing.

Both companies took over the kilns for their own purposes on 31 March 1919

### Aero-Engine Components

During August 1917, heavy demands for Rolls Royce aero-engines were received by the Controller of Aeronautical Supplies, special steps therefore, had to be taken to increase production.

Because of their experience in repairing French aero-engines, the firm of Clement Talbot at Ladbroke Grove was selected by the Government for repair and producing spares for Rolls Royce engines.

The works were taken over by the Ministry on 1 January 1918 and dealt with the repair of RR engines returned from aerodromes within the counties around London.

The total output of repaired engines during the period of the works running as a national factory was 608.

The works returned to Clement Talbot on 28 February 1919.

During January 1917, in order to undertake a large contract for the supply of aero-engine parts, the Government authorised Mitchell, Shaw and Company, to purchase the Goss Printing Works at Hayes, Middlesex.

The Ministry of Munitions decided in October 1917, to take over the management of the factory, as the output was unsatisfactory.

After the change in management, the organisation improved and production increased.

The factory was sold in September 1919 to the Cosmos Consolidated Company.

### National Balloon Factory - Finchley - Church End (London)

end 1917 demand for kite balloons for the Home Defence - anti-submarine programme.

The decision was taken therefore, to establish a "National" Balloon factory.

site was found in Finchley, North London,

A Cinema, the property of Bohemia Ltd.

The premises were taken over under the Defence of the Realm Act

managed jointly by the Sidney Davidson Balloon Company and Davidson Aviation Company,

owing to some delay in setting this up,

the factory was taken over in July 1918 by the Controller of National Aircraft Factories.

Production of Caquot and Nurse type balloons began in April 1918,

total number of balloons was 118.

297 employees, 270 were female.

closed on 8 February 1919

sold around June 1919 to the Kiwi Polish Company.

**sixteen firms tendering for War Office munitions contracts:**

## Notes on "Civil Aviation"

1. WG Armstrong Whitworth & Co. Ltd.
2. Harper Sons & Bean Ltd.
3. William Beardmore & Company
4. Head Wrightson & Co.
5. Cammell Laird & Company
6. Kings Norton Metal Co.
7. Coventry Ordnance Works
8. The Projectile Co. (1902) Ltd.
9. Dick Kerr & Company
10. Rees Roturbo Manufacturing Co.
11. The Electric & Ordnance Accessories Co.
12. Vickers Ltd.
13. T Firth & Sons
14. J & P Hill
15. Hadfields Ltd.
16. Watson Laidlaw & Co.

August 1914 : UK, barely 1000 men constitute the entire British aircraft industry - disparagingly referred to as "the Trade" by the Navy, Army and the Government. <sup>65</sup>. There exist a number of civilian aircraft manufacturing firms, Nine are well known:

1. A.V Roe & Co. Ltd.
2. Sopwith Aviation Co. Ltd.
3. Handley Page Ltd.
4. The British and Colonial Aeroplane Co. Ltd ("Bristols")
5. Grahame-White Aviation Co. Ltd
6. Blackburn Aeroplane and Motor Co. Ltd
7. Aircraft Manufacturing Co. Ltd.
8. Martin & Handasyde Ltd.
9. Short Bros. Ltd

In addition to the "well known's" there are also:

1. J.Samuel White Ltd.
2. S.E Saunders Ltd
3. Hewlett & Blondeau Ltd
4. White & Thompson Co. Ltd.
5. H.J Mulliner Ltd.
6. **Pemberton Billing Ltd.**
7. Bleriot (UK) Ltd. (British Bleriot)
8. British Caudron Co. Ltd.
9. numerous "Foreign Licensees"

Additionally, civilian owned *armaments companies* manufacturing aircraft are:

1. Vickers Ltd.
2. Coventry Ordnance Works Ltd.

August 1914 : Dominion of Canada - Order-in-Council passed under the War Measures Act bans all flying in Canada except with militia permission.

1. Canadian Militia headquarters (Sam Hughes?) sends message to regional headquarters and major police forces: "Arrangements are being made for an aviator named E.L. Janney to fly into Canada from the United States; and I am to request, should he come your way, that you offer him no hindrance."
2. Commissioner of the Dominion Police, A.P. Sherwood, replies: "If Mr. Janney does not run into any trouble up above, I do not think he will be interfered with below."

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<sup>65</sup> Harald Penrose, *British Aviation - The Great War and Armistice 1915 - 1919*, Putnam & Co., London 1969. pg. SBN 370-00128-1

## Notes on "Civil Aviation"

25 August 1914 : Minister of militia and defence, Canada (Sam Hughes) cables British minister of war (Lord Kitchener) to ask if the services of aviators were required.

31 August 1914 : Kitchener replies: "six expert aviators could be taken at once and perhaps more later." To date, 4 Canadians had gained "Aero Club of America" certificates. <sup>66</sup> Canada supplying pilots to Britain at this time was a "non event". <sup>67</sup>

04 August 1914 : The RNAS possesses 71 aircraft (40 landplanes and 31 seaplanes) of 33 different types made by 13 manufacturers. The aircraft have 18 different engine types supplied by 6 engine manufacturers.

18 different engine types built by 6 engine manufacturers:

1. Anzani;
2. Austro-Daimler;
3. Gnome;
4. Mercedes;
5. Renault;
6. Salmson (Canton-Unne).

13 different makes of landplanes falling under two flavours

A. Biplanes, comprising types:

1. Avro,
2. B.E.2,
3. Bristol,
4. Caudron,
5. DFW,
6. Henri Farman,
7. Maurice Farman,
8. R.E.5,
9. Shorts,
10. Sopwith.
  - A. The "Baby", commonly called a "Schneider" due to common ancestry, differed from the Schneider by way of an "open Horseshoe" cowling and 110 hp Clerget.
11. Vickers.

B. Monoplane, comprising types:

1. Bleriot;
2. Deperdussin.

**The seaplanes will be dealt with in a later chapter.**

By the end of 1914 the "war needs" of naval aviation had gone far to curtail the multiplicity of types seen at the outset.

December 1914 : The principal landplanes flying were:

1. Avro,
2. Bristol,
3. Henri Farman,
4. Maurice Farman,
5. Grahame-White Box-Kite,
6. Morane-Saulnier and
7. Sopwith Tabloid.

When mobilization was ordered, four squadrons of the RFC attempt to standardize their flying equipment before proceeding overseas to France.

No. 2 Squadron equipped to go to France.

No. 3 Squadron equipped to go to France.

No. 4 Squadron equipped to go to France.

No. 5 Squadron equipped to go to France.

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<sup>66</sup> <https://legionmagazine.com/en/2004/07/a-high-flyer-indeed/#sthash.TvoKVHoh.dpuf>

<sup>67</sup> <https://legionmagazine.com/en/2004/07/a-high-flyer-indeed/#sthash.TvoKVHoh.dpuf>

## Notes on "Civil Aviation"

But the mixed collection of types and the small numbers of aeroplanes owned by the RFC enabled this to be done only in 3 instances:

No. 2 Squadron - equipped with the B.E.2

No. 4 Squadron - equipped with the B.E.2,

An "Aircraft Park" (repair depot) equipped with spares:

- 1) 4 each Sopwith Tabloids fitted with 80 horsepower Gnome engines
- 2) 3 each B.E.8's fitted with 80 horsepower Gnome engines
- 3) 3 each Henri Farman aeroplanes fitted with 80 horsepower Gnome engines
- 4) 9 each B.E.2's fitted with 70 horse-power Renault engines
- 5) 1 each B.E.2c's fitted with 70 horse-power Renault engines.

A detachment of No. 2 (Aeroplane) Company of the Royal Engineers' Air Battalion.

- 1) No. 1 Squadron - equipped with "air-ships".
- 2) No. 2 Squadron - equipped with fixed wing aeroplanes
- 3) No. 3 Squadron - equipped with fixed wing aeroplanes,

16 September 1914 : Minister of Militia and Defence - Colonel Sir Samuel Hughes, authorises the "adventurer" Ernst Lloyd "Tony" Janney of Galt, Ontario to:

1. buy an airplane,
2. form the Canadian Aviation Corps (CAC) and
3. accompany the First Canadian Division to England. <sup>68</sup>

The two other members of the CAC were:

1. Lieutenant William Frederick Norman Sharpe of Prescott, Ontario, one of the 4 Canadians certified as a pilot by the Aero Club of America;
2. Harry Arthur Farr from Victoria British Columbia, infantry unit, as mechanic, to be promoted to Staff Sergeant. (possibly came from from **30th Regiment, British Columbia Horse**. 1914 saw the formation of the Victoria Independent Squadron, December 1914 many volunteers from the regiment joined the newly formed 2nd Regiment Canadian Mounted Rifles)

1. in Marblehead, Mass.? , Ernest Lloyd Janney bought an airplane for \$5000.
2. Ernest Lloyd Janney selected a Burgess-Dunne biplane, a "design so stable that it could almost be flown "hands off."
3. Burgess-Dunne two-seat tailless swept-wing pusher floatplane
4. Burgess-Dunne biplane designed by British aeronautical pioneer Lieutenant J.W. Dunne
5. Burgess-Dunne built by American boat builder Stirling Burgess of Marblehead, Mass..
6. When Ernest Lloyd Janney appeared at the company office in September,
7. Janney insisted on near-instant delivery.
8. The aircraft Ernest Lloyd Janney wanted was a seaplane "demonstrator"
9. "demonstrator" needed an engine overhaul after many hours' running.
10. Burgess-Dunne employees did what they could, crate the machine, and ship it by rail to Isle La Motte, Vt.
11. At Isle La Motte, Vt., the Burgess-Dunne is reassembled. From Isle La Motte, Vt. the aircraft is flown to Quebec, Janney is a passenger.

18 September 1914 : Lieutenant-Colonel A.J. Oliver commanding officer, 29th Regiment, (Galt, Ontario) composes a letter to assistant adjutant general, 1st Division (London, Ont.) in regards to "Janney":

*"It is the impression of a great many people here in Galt, to which city this party belongs, that absolutely **no reliance should be placed in him** in any way, shape or form and **his statements in connection with flying have always been taken as a joke**. He is a high flyer all right, but **the meaning of the term is entirely different from that normally applied to an aviator.**"* <sup>69</sup>

Lt.-Col. Oliver's letter was later sent to militia headquarters in Ottawa, a copy is held in the National Archives of Canada.

21 September 1914 : The Burgess-Dunn left Isle La Motte, Vt on the delivery flight:

1. with Burgess-Dunne pilot, Clifford Webster, at the controls.

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<sup>68</sup> <https://legionmagazine.com/en/2015/06/canadian-flyers-go-to-war/#sthash.Nujhovay.dpuf>.

<sup>69</sup> <https://legionmagazine.com/en/2004/07/a-high-flyer-indeed/#sthash.TvoKVHoh.dpuf>

## Notes on "Civil Aviation"

2. Janney piloted the machine about one-quarter of the time.
3. The two stopped at Sorel, Que., for fuel - where he is arrested..
4. newspaper reports verify the arrest
5. Janney was arrested on landing at Sorel, Que. on suspicion of being a spy,
6. Janney was freed only after a telephone call to Hughes.
7. Government documents do not mention this arrest episode,
8. Burgess-Dunne pilot Webster did not mention the incident in a letter he wrote at the time.
9. En route to Quebec City, the engine packed up and Webster force-landed at Deschaillons, east of Trois-Rivières.
10. The Burgess-Dunne company sent a mechanic and parts to Canada.

29 September 1914 : the Burgess-Dunne arrived in Quebec (with troops at ?)

1. Burgess-Dunne is subsequently loaded aboard the SS Athenia, at anchor in the St. Lawrence river in Quebec.
2. *Janney telegraphed some auto mechanics in Galt, ordering them to report to him for services with the CAC.*
3. *auto mechanics asked if Janney had such authority to summon them in such a fashion. He did not.*

14 October 1914 : The Canadian Contingent arrives at Plymouth and is disembarked on the 15th. After arriving in England, the Canadian troops (?) were sent to the Camp (20 miles from) the Salisbury Plains for advanced training. before they entrained for Salisbury Plains a well-known place which had been used for the camping and drilling of British soldiers during many years

4. The CAC tags along to Salisbury Plain.
5. the Burgess-Dunne—damaged during the sea passage—was never repaired.
6. Ernest L. Janney spent the next several weeks travelling about Britain, learning what he could about aviation.

October 1914 : Canadian Camp - Salisbury Plains : a sense of irresponsibility amongst the officers. A correspondent of the Toronto Star of Nov. 27th, said to be a member of the Salisbury Staff, put it this way: "The man who makes a good officer is he who realizes that his place means more work, harder work than the private does who digs trenches. Men spend their entire lives at learning the game. But the majority of the 1500 officers at Valcartier did not seem to understand. They were enthusiastic, but it was misapplied, this enthusiasm. And so, Imperial officers shrug their shoulders and say that annihilation would overtake the majority of the troops should they go to the front under the officers who now nominally lead them."

06 Nov 1914 : Ernest L. Janney presents Major-General / Lieutenant-General Sir Edwin A.H. Alderson, the general officer commanding the Canadian Contingent, with a proposal "for a real air corps", recommending a "unit" with:

- A. 4 operational aeroplanes, 4 spare aeroplanes
- B. seven officers,
- C. seven sergeants and
- D. 32 mechanics.
- E. Ernest Lloyd "Tony" Janney had calculated how much motor (10 trucks) and horse-drawn (5 horses) transport it would need, how much oil and gasoline it would consume, and the cost for one year, which amounted to \$116,679.25;
- F. no suggestions as to how the "unit" would be used;
- G. None of the CAC personnel had ever been properly gazetted as members of the CEF,
- H. None of the CAC personnel had ever been properly attested as members of the CEF,

16 November 1914 : British war expenditures stated to be about 1,000,000 a day. src Mr. Asquith in parliament ?

18 November 1914 : Astonished, Alderson cables Ottawa, Department of Militia and Defence, for direction re "Two individuals" (Janney and Sharpe):

- 1) have accompanied the Canadian Headquarters from Canada claiming to be "aviators authorized by (the) minister";
- 2) Who claim to be "authorized in Militia **Order 463**" (the order posting officers to the CEF);
- 3) Please cable authorisation instructions as to:
  - a. their pay status;
  - b. Janey's request re: Large expense necessary to organize an efficient unit of 1 flight

November 1914 : Capt Janney draws an advance from the paymaster and sets off to tour England, allegedly in search of a suitable site for the CAC aerodrome (reportedly in Scotland)



## Notes on "Civil Aviation"

An incident of this period was the disposition of unattached officers within the Canadian Contingent. There were about 150 of them due partly to changes in organization, partly to the individual desire to obtain a chance of some kind, partly to not fitting in very well with War conditions. Three options were given them:

- (1) Commissions in the new Kitchener Army,
- (2) Commissions in the British Territorial Forces,
- (3) a chance in the 2nd Canadian Contingent.

A number obtained commissions (Including privates promoted from the ranks 200 Canadians were given commissions in these months.) the others returned to Canada in December under command of Lieut.-Col. C. D. McPherson. SRC - Canadian Annual review 1914.

15 January 1915 : Under General Orders issued in Canada, 62 officers are stricken off the strength of the Canadian Expeditionary Force:

- 6 Lt.-Cols'
- 7 Majors
- 1 Hon. Maj
- 18 Captains
- 30 Lieutenants

Many reasons were given by these officers for their return including:-

1. the small pay of British officers,
2. the desirability of private means in the British Army,
3. the absence of democracy in military life.

A different batch of 38 men were returned to Canada, without option in the matter, and arrived at Halifax on Dec. 11th.

19-20 November 1914 : Department of Militia and Defence, Ottawa response:

1. Janney and Sharpe sent with CEF on understanding they would join RFC.
2. Department of Militia and Defence has "NO INTENTION TO ORGANISE AN FLIGHT UNIT"....

One may ask, what had happened to "the CAC" as authorized by Hughes?

Had the minister forgotten it?

Had the minister given up on it?

Had the minister intended that Janney, Sharpe and Farr should be among the pilots that Kitchener had said he could use?

17 December 1914 : Ernest L. Janney cabled another proposal to Alderson.

1. Ernest L. Janney claimed to have bought "a beautiful Biplane of Military type"
2. which Ernest L. Janney was shipping to Canada.
3. Ernest L. Janney intended to barnstorm across the nation, even in winter, raising money by public subscription for a Canadian air squadron.
4. However, there is no evidence Ernest L. Janney had bought the plane (and brought it to Canada ... ) there is evidence however, (and lots of it) that Janney was a thief who bilked people out of their money as a result of it!

30 November 1914 : A Canadian aviation corps is being organized at Salisbury Plain, and will be attached to the Canadian army when it leaves for the front. Negotiations have been in progress between Canada and the British War Office for some time, and it has now been decided to form a squadron of twelve aeroplanes. The squadron will be in command of Captain Janney of Galt, Ontario, an experienced aviator. Captain Janney flew from Massachusetts to Valcartier camp to join the first contingent. There are two other Canadian aviators, M. Sharpe and Harry A. Farr. For the remaining posts there are no less than 469 applicants among Canadian soldiers at Salisbury Plain who want to join the aviation corps.

The British type of flying machine which has proved so successful along the fighting line in France and Belgium, has been adopted, and orders for the building of twelve have been placed, it is understood, by the Canadian government in England. The Canadian airmen will likely train, according to news received at Ottawa, at Montrose, Scotland, which is one of the British aviation centres" ("Aviation Corps Being Organized at Salisbury," The Globe (1844-1936), Toronto, Ontario, Tuesday, December 1, 1914, pg. 9, col. 1.)

01 December 1914 : Ernest L. Janney was declared AWOL by CEF authorities,

1. how could CEF discipline the man when there was no paperwork confirming his membership in the force?
2. there were no documents bestowing a commission upon him.
3. Ernest L. Janney was permitted to resign his commission.



## Notes on "Civil Aviation"

January 1915 : Ernest L. Janney sails for Canada and new ventures.

Lieutenant W.F.N. Sharpe - had taken flying lessons before the war,  
Lieutenant W.F.N. Sharpe sent first to a private British flying school,  
Lieutenant W.F.N. Sharpe then to France where he attended schools near Paris and Lyon.  
03 February 1915 : Lieutenant W.F.N. Sharpe gazetted a lieutenant in the RFC.

1915 : Shoreham, one new trainee pilot wrote home complaining "I've had no flying as we've had so many crashes lately that we've practically run out of machines!" This is borne out by the same pilot's report that there were only three aeroplanes available at one stage, one of them was an old Avro, an ex. school machine that was very difficult to fly but once mastered was said to "*enable one to fly anything straight off!*" In fact this lack of machines and instructors, too many pupils and weather so awful during the early months that many would be trainee pilots gave up waiting and opted to return to the army regiments from whence they had come. There was a six-week basic tuition period requiring a minimum of three hours dual flying and three solo which was short enough in itself but this was not always met – some trainees at Shoreham received as little as 90 minutes instruction (one had only thirty minutes) before their first solo flight which all contributed heavily to the number of accidents, fatal and otherwise at this time. Hitherto there had only been one flying fatality at Shoreham – there were eight from 1915 to 1919

04 February 1915 : Lieutenant W.F.N. Sharpe dies in a flying accident at Shoreham. takes off for his first solo flight as a pilot of No 3 (Reserve) Squadron, Royal Flying Corps. dies when his "Maurice Farman" ME.7 Longhorn or ME.11 Shorthorn ? side-slipped and crashed

04 February 1915 : Lieutenant W.F.N. Sharpe is the first Canadian casualty of the Air war.

May 1915 : Staff Sergeant H.A. Farr discharged from CAC.

February 1917 : Staff Sergeant H.A. Farr joins the RFC? - never flew in combat. or: Farr joined the Royal Naval Air Service (RNAS), ending the war with a Distinguished Service Cross and a Distinguished Flying Cross. unable to find a record of this.

May 1915 'in consequence of the Canadian Flying Corps being disbanded.' From that time on, until the end of 1916, military service entry for anyone who wished to be an aviator was controlled by individuals in Ottawa who, in addition to their other duties, acted for this purpose on behalf of the RFC and the RNAS. A total of 22,811 Canadians served and 1,563 gave their lives.

February 1915 : The Canadian Contingent left Salisbury Plain.

May 1915 : Canadian authorities were told that a "flying machine" valued at about £1,000, had been left behind in England. Searches began to locate it, but nobody told those looking exactly what type of airplane they were seeking.

June 1915 : Investigation into missing CAC flying machine in UK concludes rusty parts and 2 inner tubes were all that could be found.

June 1915 : Janney back in Canada, claiming rank of captain.

03 February 1915 : the Halifax Morning Chronicle, under the headline "Canadian Air Man Returns From The Front," featured a story with some outrageous statements.

- A. Ernest L. Janney claimed he had flown with the French army against Moroccan rebels.
- B. Ernest L. Janney description of the Burgess-Dunne delivery from Massachusetts suggests a direct five-hour flight at altitudes up to 23,000 feet.
- C. Ernest L. Janney described artillery observation flights in France, with shells whistling by his machine.
- D. Ernest L. Janney comments about the CAC omitted all references to Sharpe and Farr.
- E. Ernest L. Janney comments include new friend "Lieutenant" Bernard Hale who had accompanied him to Canada,
- F. Summaries of this interview appear in other Canadian newspapers.
- G. When Summaries of this interview appear in the British press several people who had known Ernest L. Janney write letters counteracting his account.

Bernard Hale had a British pilot's certificate, issued in May 1914, "Lieutenant" Bernard Hale held no military rank.  
Bernard Hale joined the Royal Naval Air Service in 1917.

When date? : Ernest L. Janney bought a second-hand Caudron in the U.S. and sought permission to operate a flying school near Toronto, in partnership with "Lieutenant" Bernard Hale.

## Notes on "Civil Aviation"

Militia authorities approved the school in April 1915, stressing this consent entailed no militia recognition or responsibility. Ernest L. Janney identifies himself as "Major" and "Officer Commanding, Canadian Flying Corps" when promoting the new school. Ernest L. Janney offers students a course costing \$500 : half up front, the balance on graduation. Both Ernest L. Janney and Bernard Hale seen wearing Canadian or British uniforms in relation to the school. Word of Janney and Hale wearing Canadian or British uniforms reaches the chief of the general staff. chief of the general staff issues memo: "Please clip the wings of Captain Ernest L. Janney and Lieutenant Bernard Hale." However, Canadian Militia officers unable to locate either man.

Janney Flying school vanishes in 1915 and Ernest L. Janney headed for the U.S.

1915 - 1917 : Ernest L. Janney in and out of newspaper and aviation magazine stories, none giving a full account of his actions.

1916 : Ernest L. Janney attached himself to a New Jersey State Naval Militia flying unit.

1917 : Ernest L. Janney organized the Janney Aircraft Company in Munroe, Mich., selling stock and building one plane.

23 March 1918 : Munro, Michigan newspaper article stated some of the plane's "machinery caught in the grass and the expected (trial) flight did not take place."

23 March 1918 : Munro, Michigan newspaper article states Janney was reported to be in California

2? March -April ? 1918 : San Francisco news articles note Janney charged with impersonating a Canadian officer.

May 1918 : Ernest L. Janney returns to Canada and tries, unsuccessfully, to secure a commission in the CEF.

Summer 1918 : Lieutenant-Colonel J.T. Cull of the Royal Air Force organises "Royal Naval Air Service - Canada" in response to German submarine operations in the Atlantic.

A. Janney ingratiated himself with Colonel Cull.

B. Colonel Cull arranged that Janney be commissioned as a sub-lieutenant in the Royal Canadian Naval Volunteer Reserve and assigned to RCNAS duties.

C. Militia officers wrote to Colonel Cull warning that Janney's previous record had been unsatisfactory.

D. Despite these reports, Colonel Cull retains Janney.

E. Janney's precise RCNAS duties are unclear.

F. RCNAS organisation suspended December 1918

G. Janney retained after the organizing of the RCNAS suspended.

H. Janney demobilized January 1919;

I. Colonel Cull tried to have Janney released in the rank of lieutenant.

J. Colonel Cull writes Janney complimentary letter. "I have nothing but praise for the capable and energetic way you have handled everything that was given you to do."

K. Colonel Cull acknowledged that he had received and investigated some adverse reports on Janney, yet he had found no foundation in them.

L. On at least two occasions, when the Department of National Defence was asked to describe Janney's military service, Colonel Cull's assessment was released - **rather than the original and more critical opinions of the Canadian army officers.**

October 1914 : RFC command structure overhauled. General Sir David Henderson made head of the RFC. Primary roles of the RFC: reconnaissance and artillery direction.

October 1914 : USA : NEW CURTISS MILITARY TRACTOR.

"Model N" is the latest military tractor from the Curtiss plant in Hammonds-Port, with a range of speed, with two people up and five hours' fuel, of from 40 to 75 miles an hour, climbing 4,000 ft. in 10 minutes, using a 100-h.p. O-X's motor, a refinement of the O-X 90-100-h.p. motor which is now standard in Curtiss machines.



October 1914 : M. I. T. COURSE OPENS.

**One of the 6 students** recently registered at the Massachusetts Institute of Technology is Captain V. E. Clark, of t'niontown. Pa., who has joined the institute for the benefit of the special post-graduate work on aerodynamics.

1. Captain V. E. Clark joined the institute for the benefit of the special post-graduate work on aerodynamics. :-

## Notes on "Civil Aviation"

1. is a graduate of Annapolis
2. has been transferred to the army, and
3. is attached to the Aviation Section of the Signal Corps.
4. has been at the flying school at San Diego for eight months and
5. has become skilled in the management of aeroplanes.

The ruSw course at Tech, which has been open only this term, is beginning auspiciously, according to Lieutenant Hunsaker, who has charge of the instruction.

Besides Captain Clark',

2. M. S. Chow (Chinese student) :-
  1. M. I. T. graduate in naval architecture, is
  2. making a study of aerodynamics leading to the degree Master of Science;
3. un-named Chinese student taking the work in their regular institute courses;
4. un-named Chinese student taking the work in their regular institute courses
5. un-named Chinese student taking the work in their regular institute courses
6. un-named (American ?) senior student in mechanical engineering is specializing in aerodynamics.

November 1914 : USA : ARMY WANTS AN **AIR ENGINEER**

The U. S. Civil Service Commission announces an open competitive examination for an "*aeronautical mechanical engineer*", i.e., a "M.E. who has specialized on aeronautical motors".

From the eligibles evolved by this exam :-

1. a vacancy at \$2400 a year will be filled in the Signal Corps Aviation School at San Diego, and
2. other vacancies as they occur in other branches of the service.

For the present this man will take up the motor end of Colonel Reker's experimental plant, while G. C. Loening will handle the aero-dynamical part of it.

Technical education will count 30 weights ;  
experience and fitness will count 70 weights.

Applicants must :-

- a) be graduates in mechanical engineering of some reputable school,
- b) be familiar with the theory and practice of engineering as applied to internal combustion motors and
- c) have practical experience in the design and testing of such machinery.

Additional credit given for experience in mechanical engineering as applied to aviation motors and machinery.

Other requirements are discreteness, moral fitness, et cetera.

Persons desiring to meet the requirements and desire this examination should at once apply for Form 1312, stating title of the examination for which the form is desired, to the U. S.. Civil Service Commission, Washington, D. C. Application must be filed with the Commission at Washington prior to close of business February 10. (Aeronautics Oct 1914 pg 116)

November 1914 : British Army eliminates post of "Officer Commanding - Military Wing", Hugh Trenchard is given the command of 1st Wing, made up of No. 2 and No.3 Squadrons.

November 1914 : RNAS Felixstowe takes delivery of Curtiss aeroplane # 950, an flying boat nicknamed the "America", one of 2 ordered by Murray Sueter at the request of Cdr. John Porte, British Admiralty, for "active" experimentation. Prior to the war, Porte designed "America" for Curtiss in order to win the 10,000 trans-atlantic prize offered by the daily mail.

Curtiss "America" specs (as delivered):

1. Wall-sided Fuselage, 5/8" planking (end-buttet) over a conventional fuselage longeron & strut framework with a flying boat fore-body shape. The butt joints of the planking being located at the step. No chines on the hull sides or planing bottom.
2. Strut and cable braced, 4 bay/ panel, Biplane wing plan with overhanging top span. Ailerons on the top wing - tips, sponsons on the lower wing, fences were subsequently added by Porte above the top wing at the outboard struts.
3. Model H-12s had 160 hp (118 kW) **Curtiss V-X-X** engines (later replaced by the RNAS with 2x 250 h.p Rolls-Royce engines)
4. Heavy aircraft, the hull was found insufficiently designed to take the stresses imparted during anything but calm water landings and assembled using poor methods of construction, the aircraft was found to have directional control as well as planning problems and also shipped water over the nose due to insufficient forward buoyancy

29 December 1914 : Malcolm McBean Bell-Irving reports to No. 1 Squadron RFC in France. wounded twice, had at least one flying accident, was twice mentioned in dispatches, and was awarded the Military Cross and the Distinguished Service Order. - See more at: <https://legionmagazine.com/en/2015/06/canadian-flyers-go-to-war/#sthash.Nujh0vay.dpuf>

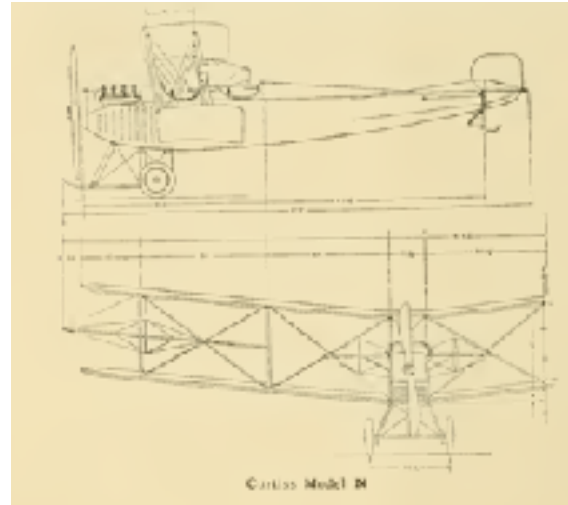
## Notes on "Civil Aviation"

1914 : United States : Glen Curtiss refurbishes the Langley aerodrome, for the Smithsonian Institution as a means of trying to prove "prior art," i.e., to show that manned heavier-than-air flight had been possible before the introduction of the Wright invention.

1914 : United States : The U.S. Census Bureau lists 16 aircraft manufacturers with a combined total output of 49 aircraft. In 1914, as the world found itself on the brink of war, only 23 of the 3,700 airplanes in the world were U.S. owned. Recognizing the disadvantage at which this imbalance put the United States, a rider to the U.S. Naval Appropriations Act, 1915 establishes the National Advisory Committee for Aeronautics "to supervise and direct the scientific study of the problems of flight, with a view to their practical solution. Src reference : NASA SP-4216 Airborne Trailblazer, Two Decades With NASA Langley's 737 Flying Laboratory - Lane E. Wallace, NASA History Office 1994

Lieut. Col. F. H. Sykes, commandant of the British Royal Flying Corps, in his annual address at the Royal United Service Institution. London, reviewed the progress made in military aviation during the past year and summarized the information gained through experience. Principally he dealt with the factors of safety under the conditions of present aerial flight, and suggested changes in construction of advantage to military aviators. He advocated:

- the abandonment of flexible wings ,
- the universal adoption of flaps or ailerons;
- the use of more substantial landing gear;
- increased strength in design and construction;
- simplicity in design and construction;
- experimental work on better means of communication between aeroplane and aeroplane, and aeroplane and the ground ;
- the standardization of minor parts;
- the development of a larger type of machine.



On the subject of flexible wings Colonel Sykes said: "One cannot consider airworthiness without touching on the question of wing-warping as opposed to flaps. There is no doubt that the continual flicking about of the control lever during a long flight, caused by the self-warping of wings in a wind, has a very tiring effect on the pilot, and further, the warping wing requires more keeping in true than one fitted with flaps. The dismantling and general handling of wings fitted with flaps is, besides, easier, quicker, and less liable to mistake."

### THE AEROPLANE HAZARD.

The United States Compensation Inspection Rating Board has computed the aviation hazard of employees of aeroplane manufacturers and fixed the rate at 48.06 per cent of the payroll, with a minimum of \$1 000 per employee. The board's bulletin contains the following: "New Classification : To be inserted in manual "Aeroplane Manufacturers—Operation and demonstration, 48.60 per cent. Minimum premium \$1,000 for each employee engaged in operation and demonstration." This is the highest rate in the compensation rate manual.

30 December 1914 : USA : ARMY'S FIRST WAR 'PLANE.

The Burgess-Dunne (BD) **No. 3** was accepted by the United States Signal Corps Board after successful tests at San Diego, December 30, 1914. It is equipped with a 135 h.p., 9-cylinder Salmson motor. The machine developed a speed of 75 miles per hour with full load, consisting of two passengers, four hours of fuel. In this condition it climbed 350 feet a minute. This machine was built as an experimental type subject to further development. The wings are of the same dimensions as the original Burgess-Dunne aeroplane. See p. 83, March 31, 1914, Aeronautics. "The machine is inherently stable in the broadest meaning of the term. During the tests Mr. Webster allowed the machine to fly by itself for long periods, and demonstrated that it could not be stalled even with the levers pulled back and the motor suddenly shut off. It was not expected that this aeroplane would develop anything like the speed or climbing power shown in the tests and its success demonstrates beyond doubt that high efficiency may also be obtained in the inherently stable type of aeroplane. The machine is shown equipped with a Turner aviaphone and a Benet-Merciers rapid firing gun. Burgess supplied the Canadian contingent in the big war. Burgess has so built this type that its upper and lower wings by means of

hinged struts are capable of being folded one against the other. The flying wires remain at all times intact and the wing supporting wires alone need be cast off for disassembling. These features together with the entire absence of tail and tail surfaces make this

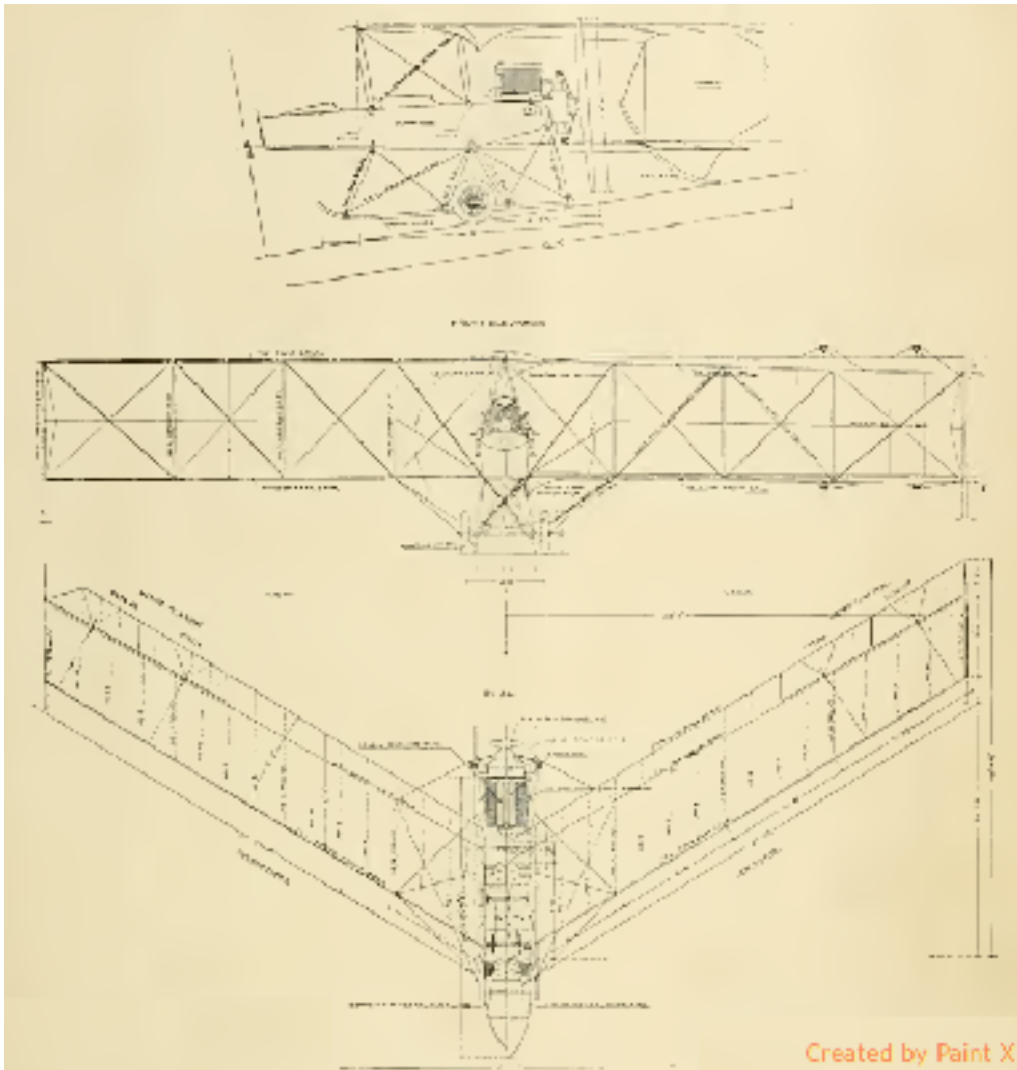
## Notes on "Civil Aviation"

aeroplane compact and easy to handle. Wing spread, 45 ft. ; length over all, 26 ft.; height, 10 ft. 11 ins.; weight, net, 1250 lbs.; fuel, oil and water for 300 miles, 420 lbs.; armor, 100 lbs.; useful load, 420 lbs. ; total, 2140 lbs.

It is expected that a new Burgess- Dunne aeroplane will be delivered at Pensacola early next month. This machine has some improvements over the first one that was obtained. In the aeronautic service of the U. S. Navy at the present time there are 18 officers and 77 men and 12 machines, covering: 6 hydro-aeroplanes, 5 boat aeroplanes and 1 boat and land aeroplane.

### ARMY ACCEPTS "AUTO-STABLE"

The BD-3 Salmson motored Burgess-Dunne was accepted on December 30 by a trial board of the Army, consisting of Lieutenants Fulois, Milling and Carberry. Webster flew the machine both on land and water with full load and his control of the machine both on the ground and in the air was a great surprise to all who witnessed the flights.



late 1914: - Mr. B.D Thomas, resigns his position as an aeroplane designer with Sopwith's and emigrates to the USA to work for Glenn Curtiss. His first project with Curtiss in 1914 is to design a “trainer”, which he does, closely following the Admiralty type 137 seaplane he had drafted for Sopwith's during the past year src Harald Penrose, pg 35

1914 : UK development of the Air Speed Indicator: originally devised as a stall warning indicator by Mr. Alec Ogilvie (who was an early owner of a Wright biplane built under license in the UK by Short Bros.) and Mr. Harris Booth, BA (Prior to the war he was conducting practical aerodynamic research for the Aerodynamics section of the UK National Physical Laboratory in Bushey Heath. On March 30, 1912 Booth was appointed to serve on the Research Committee of the Royal Aeronautical Society, 3 months later he was elected AfRAeS and by 1914 was a technical adviser to the Admiralty at RNAS Eastchurch) is progressing. The final instrument design is accepted by the AID and handed off for manufacturing production in 1915.

January 1915 : 5 months after the outbreak of the War, British aeroplane manufacturing capacity has multiplied, however only the Royal aircraft factory, Farnborough holds "wide-ranging" design and construction experience. Additionally as "the Factory" houses the National Physical Laboratory (NPL) dedicated to aviation, it also has the ability to undertake investigation of aerodynamic and structural problems in a scientific manner. <sup>70</sup> To date "the Trade" and "the Factory" had produced less than 200 landplane and 50 seaplane designs, of which 60 are experimental. <sup>71</sup> What was clear, was that there "was dire need for hundreds, and thousands" of aircraft to win the war.

01 January 1915 : The french infantry have lost 900,000 men, either killed, wounded or made prisoner. The British Expeditionary Force have lost over 90,000.<sup>72</sup>

1915 : Owen McDowall of Owen Sound, Ontario completes his airplane.

1915 : British Royal Navy re-introduces the "Non-Rigid Airship" into the fleet for long range maritime patrols - while battles at sea are fought on a relatively "flat" surface, hence precluding the use of "Short Range" aerial observation, the ability to detect the enemy's fleet at long range was required. This results in the "North Sea" or "NS" class of blimps which utilised an aeroplane fuselage suspended beneath the gas-bag from which the crew / pilot operated the rudder / elevator / gas valves etc.

1915 : the RFC is re-organised into "Wings", each under separate command officers, with two, three or, in some case four squadrons to each wing. At this time Lt.-Col. Sykes - formerly Officer Commanding, RFC is now "Gazetted" as "General Staff Officer, RFC". Sykes (a personal friend of Geoffrey deHavilland) is replaced in "the RFC in the field" by an Army Officer, "Boom" Trenchard

1915 : British Military Aeronautics Directorate <sup>73</sup> - Personnel:

1. Maj. Sefton Brancker,
2. Maj. Geoffrey Salmond,

1915 : British Army : Royal aircraft factory <sup>74</sup>- Personnel:

1. Mr. Frank Godden, Chief pilot
2. Mr. H.R. Parker, pilot
3. Mr. Mervyn O'Gorman,

1915 : the Editor of *the Aeroplane*, who normally advocated "the Trade" at the expense of "the Factory" commented on the new D.H.1 in comparison to the B.E.2c - even though Geoffrey deHavilland designed the B.E.2c " Everything is the simplest. There are practically no special:

1. stampings,
2. forgings,
3. pressings,
4. or other irritating "details"

which have been breaking the hearts of the unfortunate firms that have been persuaded to enter the aeroplane manufacturing industry by orders for B.E.2c, and the D.H.1 is a better aeroplane.<sup>75</sup>

<sup>70</sup> Harald Penrose, *British Aviation - The Great War and Armistice 1915 - 1919*, Putnam & Co., London 1969. pg. 9 SBN 370-00128-1

<sup>71</sup> Harald Penrose, *British Aviation - The Great War and Armistice 1915 - 1919*, Putnam & Co., London 1969. pg. SBN 370-00128-1

<sup>72</sup> Daily Graphic, 01 January 1915

<sup>73</sup> Harald Penrose, *British Aviation - The Great War and Armistice 1915 - 1919*, Putnam & Co., London 1969. pg. SBN 370-00128-1

<sup>74</sup> Harald Penrose, *British Aviation - The Great War and Armistice 1915 - 1919*, Putnam & Co., London 1969. pg. SBN 370-00128-1

<sup>75</sup> Harald Penrose, *British Aviation - The Great War and Armistice 1915 - 1919*, Putnam & Co., London 1969. pg. SBN 370-00128-1



## Notes on "Civil Aviation"

**1915 : RFC's Central Flying School : The D.H.1 is used for advanced flying training, wastage of the machinery is high, most pilots wrecking at least one aeroplane, but frequently 5 or 6, from bad landings".<sup>76</sup>**

Aviation called for a select and limited number of men; it required special aptitudes and training.

As a military arm in Canada, Aviation had no strong official support in 1915 as the Minister of Militia was understood not to care for this branch of the Service in comparison with others.

During that year there had been tentative private efforts at organization and training and the raising of the necessary funds ; an active class of young men were anxious to take up aviation and a movement along this line was energetically pressed by Col. W. Hamilton Merritt of Toronto.

It was understood that the British War Office wanted aviators and individual Canadians who went over from time to time soon found a place in the British service when its requirements were met.

Col. Merritt wrote the War Office as to his efforts to organize a Canadian Fund for the purpose of training aviators, which he had started months before, and a reply of Feb. 18, 1916, stated that his "scheme" (Programme) should prove of "material assistance" and that "on completion of their training in Canada, these men would be enlisted in the Royal Flying Corps as 2nd-class air mechanics, draw pay as such at the rates provided in the royal warrant for pay, etc., and be granted free passage."

Meanwhile Lieut.-Col. C. J. Burk, d.s.o., had been sent to Canada to make extensive first-hand inquiries regarding the possibility of training young Canadians to become military and naval aviators. Lieut.-Col. C. J. Burk had travelled from coast to coast making inspections, and on his return to London early in 1916 was understood to have reported favourably upon the proposals of Col. Merritt and others in Toronto, Winnipeg and Vancouver who had been specially anxious in the matter. Revived efforts followed with the appointment of a Committee

in Toronto (A. G. C. Dinnick, Chairman) to arrange the establishment

of a local Training School ; the collection of a Fund in Vancouver

to help the B. C. Aviation School in the purchase of 5

aeroplanes then under local construction; a statement dated Mar.

16 from H.R.H. the Governor-General that "he endorses the War

Office letter to the effect that if you train 5 to 10 candidates per

month for the Royal Flying Corps, who are under 30 years of age,

medically qualified, of proved British birth and obtain a flying

pilot's certificate, they will be accepted for enlistment in the Royal

Flying Corps during the War." It was, however, pointed out by

Col. E. A. Stanton in the same letter that "this has nothing to do

with a future Canadian Flying Service, as His Royal Highness

understands that the Canadian Government does not contemplate

any such department at present," On May 12 the Naval Services

Department announced from Ottawa that the Admiralty was calling

for a limited number of trained aviators from Canada for commissions

in the Royal Naval Air Service, and that, with a view to

providing training, the Curtiss Aviation School would be re-opened

in Toronto. Canadian aviators wishing to enter the service were

requested to apply to the Department and the age limits of candidates

were set at 19 to 25 years. Only well-educated, athletic

and thoroughly fit men, with excellent eye-sight, could be accepted.

A month later nine casualties were announced amongst the 400

or more Canadian Aviators already in the British service.

Meantime the Curtiss Flying School of Aviation had been underway

with 5 men a month in training at a payment of \$1,000 each

and, on July 13, a Deputation headed by Col. Merritt and Mayor

Church asked the Ontario Government to either aid in the establishment

of an Inter-Provincial School at Deseronto or join the

Dominion Government in granting \$100 to each student upon completion

of his course ; the "City Council granted \$8.00 a week to each

student from Toronto preparing for the Royal Flying Corps; the

British Government guaranteed \$375 of his expenses to each

accepted aviator. During the summer the movement extended and

from London came a cable on Aug. 23 to the Montreal Gazette

stating that "the establishment of a Canadian Flying Corps is

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<sup>76</sup> Harald Penrose, *British Aviation - The Great War and Armistice 1915 - 1919*, Putnam & Co., London 1969. pg. 26 SBN 370-00128-1



## Notes on "Civil Aviation"

urged not only for military utility but for commercial benefits, as it would mean a new industry for Canada, the proposal being to build the aeroplanes in the Dominion." It was added that 8 Canadian Flying officers were on their way to Canada to act as instructors. The Aviators in training at Long Branch, near Toronto, were inspected by H.R.H. the Duke of Connaught on Sept. 7 and a statement of work done and progress made by the Canadian Aviation Fund was read by Col. Hamilton Merritt who, also, urged the presentation by each Canadian Province of a squadron of 10 Battle-planes to the Royal Flying Corps. At the end of this month Capt. Lord Alastair Innes-Ker, d.s.c, arrived in Canada to recruit for officers and, men in the Military branch of the Service and he visited Ottawa, Toronto, Montreal, Winnipeg, Regina, Calgary, Vancouver and Victoria. Matters moved swiftly after this. Mr. Premier Hearst of Ontario returned from England in October strongly favourable to the establishment of a Canadian Corps and it was announced about the same time that an Aeroplane factory costing \$1,000,000 and equipped to turn out 6 machines a month was to be erected in Toronto with advance contracts of purchase from the British Government. The project was to be financed by the Imperial Government, and controlled by a Board of three members—one representing the Admiralty, one the War Office, with a business man nominated by the Imperial Munitions Board of Canada. It was understood that this action was taken as the result of a careful inquiry made in which the Board found that very large orders for aeroplanes had been placed in the United States—\$12,000,000, for instance, with the Curtiss Company of Buffalo. On Nov. 24 it was stated that Canadian Aeroplanes, Ltd., a creation of the Board, had been organized with a capital stock of \$500,000 for the purpose of taking over the Curtiss Aeroplane Co. plant in Toronto. Frank W. Baillie of the Canadian Cartridge Co., Hamilton, who had given to the Government \$750,000, representing profits on war orders, was appointed Managing-Director. J. W. Flavell, E. R. Wood and Mr. BaiUie were the men chiefly associated with the project which would, in time, involve many millions of capital and expenditure. In December the Naval Services Department called for more Canadian aviators for the

# BURGESS- Military Aeroplane D U N N E

*Furnished to*  
**United States  
Great Britain  
Russia**

**Self-balancing  
Self-steering  
and  
Non-capsizable**

Form of wing gives  
an unprecedented  
arc of fire and range  
of observation.



Par excellence the  
weight and gun-  
carrying aeroplane  
of the World.

Tail-less and folding.

Enclosed nacelle  
with armored cock-  
pit.

Speed range 40-80  
miles per hour.

Climb 400 feet per  
minute.

Burgess-Dunne 3 Delivered to U.S. Army at San Diego, December 24

## THE BURGESS COMPANY, Marblehead, Mass.

Sole Licensees of the American-Dunne Patents

## Notes on "Civil Aviation"

Royal Naval Air Service and also for Canadian recruits as Naval Signallers and an Aero Club of Canada was formed, in touch with the Royal Flying Corps, with Col. Hamilton Merritt as President, Lieut.-Col. H. C. Cox, Toronto, Vice-President for Ontario; Carl Riordon, Montreal, Vice-President for Quebec; W. R. Allan, Winnipeg, Vice-President for Manitoba. Its objects were as follows:

"To encourage various forms of aviation, to develop the science of aeronautics and kindred sciences, to encourage the manufacture of aeronautic devices, to plan conferences, expositions and contests, to issue pilots' licenses to qualified aviators, and to assist those desirous of taking up aviation with a view to serving in the War. "

The year closed with a complete Squadron of Canadian airmen at Belfort in France and other Canadian aviators in Mesopotamia, on the Somme, at Dunkirk and in East Africa. In Montreal the Canadian Division of the Aerial League of the British Empire continued in 1916 its active work with Sir H. S. Holt as President and G. R. Lighthall Hon.-Secretary. The year 1916 began with a record for recruiting Military Affairs: which coloured public thought and influenced Government action throughout its course. Certainly, the and Policy response to the appeal of patriotism in the first three months of the year, the immediate reply to Sir Robert Borden's call\* for 500,000 men, was splendid. During January 29,212 men enlisted in all Canada, in February 26,658 enlisted, during (Source ref : THE CANADIAN ANNUAL REVIEW OF PUBLIC AFFAIRS - WAR SERIES BY J. CASTELL HOPKINS, f.s.s., f.r.g.s. 1916 published in Toronto, 1918)

January 1915 : A "scheme" (Programme) of co-operative aircraft construction was established in Scotland with G & J Weir as the central firm. This system utilised a number of small sub-contractors for the manufacture of aeroplane parts in conjunction with final assembly of the component parts in their own works. New system, aeroplanes were erected by the firm's own staff and handed over for flight test by the pilots of the Aeronautical Inspection Department.

03 February 1915 : The "Globe" (D.), Toronto, Wednesday, February 3rd, says that Capt. E. L. Janney, a Canadian aviator, who has made a name for himself both before and during the present war, has returned from the front on the steamer, "Zeeland," which arrived this morning. He has been doing scout duty for the British Army during the last few weeks. He is now returning to organise a squadron of aeroplanes to be built, equipped, and manned in Canada. [There is no officer of this name in the R.F.C.—Ed. - The Aeroplane 03 March 1915 pg 206]

10 February 1915 - the aeroplane, pg 133 - At the second annual motor show, organised by the Montreal Automobile Trade Association, and open from January 23rd to 30th, was exhibited a biplane, apparently on Caudron lines. The correspondent who has been kind enough to send a cutting from the Montreal "La Presse," a translation of which is given below, states that the official advertisement described the machine as a "military airship, fully equipped with a bomb-thrower and a Ross quick-firing gun!" "La Presse":- "For the public in general there will be several novel attractions ; thus one will see in a special corner a real aeroplane, armoured, and mounted with a cannon for rapid fire, which has been constructed in Canada ... by the Canadian Aircraft Co. This aeroplane is mounted with a rotative Gnome motor of 60 h.p. to furnish a speed of 60 m.p.h., carrying two persons. The wings are of the semi-rigid type, and it (sic) is similar to those which have been ordered by the English aviators' corps. The true power of this biplane has been demonstrated by the magnificent flights which Mr. G. Pollien has made at more than 4,000 feet above the city of Montreal."

20 February 1915 : "New York Times" :— Ottawa, Feb. 20th.—Considerable interest has attached to the incorporation this week of a new company which purjixises to manufacture and deal in aeroplanes and seaplanes particularly. The Curtiss Aeroplanes and Motors, Limited, which has an initial capital stock of \$50,000.00 has obtained a Federal charter and will have its head office at Toronto and, it is understood, will begin active work at once. Aeroplanes and seaplanes are going to take a more active part in the present European war than they have done, and many will be required. The firms within the British Empire which manufacture aeroplanes and seaplanes are taxed to their utmost to supply all that are required, and this has probably induced Curtiss to establish a branch factory in Canada. The official announcement of the incorporation of the company appeared in to-day's

## Notes on "Civil Aviation"

"Gazette." The explanation is that the principal parts of the aircraft will be shipped from New York to Canada and put together. src:  
- The Aeroplane 17 March 1915 pg 252

24 February 1915 : The Aeroplane, pg 181 : Canada has produced an aviator after an interval of nearly six years, since J. A. D. McCurdy first flew.

"La Presse" (Montreal) of January 23rd announces that Jack Laviolette, the famous athlete, "la crosse", hockey player, and "chauffeur" of racing automobiles, has the ambition to become an aviator, and every day for several weeks he has been to Coteau Rouge, near Montreal, where, under the direction of G. Pollien, he is learning to fly. Pollien is enthusiastic about Laviolette.

25 February 1915 : The "Daily Intelligencer," of Belleville, Ontario, says:— Sarnia, Ontario, Feb. 25th :—"A fact not generally known is that "Countess Zeppelin", wife of (the Nephew of) the inventor of the famous Zeppelin aircraft, is a Canadian girl. Mary McGarvey von Zeppelin was the daughter of the late W. H. MacGarvey, formerly of Petrolia, who died recently in Austria, where he had become one of the leading oil magnates of the country. She was born in the village of Wyoming, Lambton County, in 1875, going to Europe with her father at an early age." - Ed. The Aeroplane 24 March 1915 pg 278

The Montreal "La Presse" of March 5th reports :—"Lacolle, March 4th.—An aeroplane has flown over the country a mile from here at six o'clock this morning. Several persons worthy of trust are assured of having seen it at a great height and of having heard the sound of its helice. The machine was steering towards the west." - The Aeroplane 24 March 1915 pg 278

March 1915 : Demand and output of new aircraft and engines increased, Contractors had to deliver new machines to specified aerodromes located close to their own works instead of the previous method of supplying new aircraft to Farnborough for acceptance. The previous method meant supplying new aircraft to Farnborough for acceptance, under the new system, aeroplanes were erected by the firm's own staff and handed over for flight test by the pilots of the Aeronautical Inspection Department. This eventually led to the establishment of a number of Aeroplane Acceptance Parks.

03 March 1915 : USA : The Naval Appropriation Act. approved March 3. 1915. provided for and established a National Advisory Committee for Aeronautics, the President to appoint not to exceed twelve members, to consist of two members from the War Department, from the office in charge of military aeronautics: two members from the Navy Department, from the office in charge of naval aeronautics; a representative each of the Smithsonian Institution, of the United States Weather Bureau, and of the United States Bureau of Standards ; together with not more than five additional persons who shall be acquainted with the needs of aeronautical science, either civil or military, or skilled in aeronautical engineering or its allied sciences. The members of the Advisory Committee for Aeronautics, as such, shall serve without compensation. It shall be the duty of the Advisory Committee for Aeronautics to supervise and direct the scientific study of the problems of flight, with a view to their practical solution, and to determine the problems which should be experimentally attacked, and to discuss their solution and their application to practical questions. In the event of a laboratory or laboratories, either in whole or in part, being placed under the direction of the committee, the committee may direct and conduct research and experiment in aeronautics in such laboratory or laboratories. Rules and regulations For the conduct of the work of the committee shall be formulated by the committee and approved by the President. \_The sum of \$5,000 a year, or so much thereof as may be necessary, for live years is appropriated, out of any money in the Treasury not otherwise appropriated to be immediately available, for experimental work and investigations undertaken by the committee, clerical expenses and supplies, and necessary expenses of members of the committee in going to, returning from, and while attending, meetings of the committee. An annual report to the Congress shall be submitted through the President, including an itemized statement of expenditures. Here is the committee :

Gen. George P. Scriven, Chief Signal Officer and Lieut-Col. Samuel Reber, aviation section. Signal Corps, representing the Army ; Capt. Mark L. Bristol, Director of Aeronautics, Navy Department, and Naval Constructor Holden C. Richardson for the Navy; Dr. Charles D. Walcott, secretary of the Smithsonian Institution; Charles L. Marvin. Chief of the Weather Bureau-, Dr. S. W. Stratton. Chief of the Bureau of Standards. Assistant Secretary of the Treasury Byron R. Newton, Prof. W. F. Durand, Stanford University; Prof. Michael I. Pupin. Columbia University; Prof. John F. Hayford, Northwestern University, and Prof. Joseph Ames, Johns Hopkins University, represent the contingent of "additional persons who shall be acquainted with the needs of aeronautical science, or skilled in aeronautical engineering or its allied sciences." Dr. A. F. Zahm is Recorder of the Advisory Committee.

10 March 1915 : A Canadian reader of Tnii Aerciopl.vnf. writes :—"I have been a reader of your magazine for a considerable period, both at home and abroad. I have been very much absorbed in some of your topics, and amused at some of your jokes, but I can truthfully say that when I read the account re Capt. E. L. Janney under the 'Canada' heading, I was amused and interested

## Notes on "Civil Aviation"

at the same time."

The writer of the letter goes on to state that the original Canadian Flying Corps was composed of three men, Capt. Jannev, Lieut. Sharpe (who was killed at Shoreham in Feb 1915), and Sergt.-Major H. A. Farr ; also there was a Burgess-Dunne biplane, good for at least 40 m.p.h. in a calm. This machine now reposes in a shed on Salisbury Plain, and is not even a vision of its former self, not through any accident, for it has never been flown in England, though it flew much in the United States, being used by the Burgess Co. as a demonstration machine for "steep years," as he puts it.

There is, however, a good Curtiss O.X. motor rusting away, and only needing an overhaul.

Apart from this, the Canadian Flying Corps now appears to consist of the Sergt.-Major only, without an aeroplane, for the last heard of Capt. Janney was that he was on his way to Canada, as plain civilian Mr. Janney, it having been announced in orders that he had resigned his commission. It is stated that he was never in the R.F.C., he has never flown in England—not even as a passenger—and he has never been on service on the Continent.

There seems to be an idea in Canadian circles that the R.F.C. will not undertake to train any more Canadian aviators since the death of Lieut. Sharpe. src - pg 230 The Aeroplane. March 10, 1915.

14 March 1915 : USA : BEACHEY KILLED.

Lincoln Beachey, known by sight to hundreds of thousands of people all over the country and by reputation to the whole world, met death in one of his hair-raising "dives to death" at the exposition at San Francisco on March 14th. He began the steep dive several (5) thousand feet up and when he straightened out his monoplane it gave way under the strain (structural failure of one wing and then the other) and Beachey, strapped to his machine, fell entangled in the remnants into San Francisco Bay. Beachey had had built for him a new monoplane and this was the machine he used in the fatal flight. A diver from the U. S. S. Oregon located the wrecked machine and it was hauled to the surface of the water 2 hours later. An examination by a surgeon showed that Beachey "was still alive when he struck the water and had sustained no major injury as a result of the fall, except a broken leg." There were evidences of a struggle to free himself from the mesh of twisted wires and parts and the direct cause of death was drowning. (Aeronautics pg 23 March 15, 1915)

31 March pg 309 - the aeroplane : The correspondent of "La Presse" of Montreal at Quebec reported on March sth that M. J. M. Landry, the well-known French-Canadian aviator, has received a letter from Colonel Stanton, Secretary to the Governor-General, seeking his aid in the formation of an aviation corps. M. Landry has replied in the affirmative and is now actually in touch with the promotion of the project.

\* \* \*

From the "Montreal Daily Star" :—Toronto, March 12th.—The British War Office has asked the military authorities in Canada to forward at once the names of any British subjects who are qualified aviators or airship mechanics. (Here are given the rates of pay.) Competent men will probably be given positions in the Imperial Service or Royal Flying Corps.

\* \* \*

From the "Daily News," Prince Rupert, B.C. :—Toronto, February 25th.—Discussing the possibility of an airship raid on Canada from the U. S., Mr. J. A. MacCurdy, the Canadian aviator, said to the "Daily News" correspondent : "It is possible, but not at all probable, for unless the machines were built secretly for a raid it would not be possible to get four high-powered machines in any town in the States. Apart

## Notes on "Civil Aviation"

from machines at the factories and those held by the military authorities, there are only about one dozen machines in the States which could make the journey, and these are flying-boats. It is a comparatively easy matter for a person to be deceived as to the sound of the engines," added Mr. MacCurdy. "Railway engines in blowing off steam often make a purring sound which is identical with the noise made by aeroplanes." Mr. MacCurdy further explained that nearly all the aeroplanes in the States are small ones, used solely for exhibition purposes, and these had only a short radius and could fly only about 200 ft. high. For a long flight much larger engines were needed and the ability to carry a large supply of petrol. Another and an important reason why the story looked wrong was that aeroplanes practically never fly by night. This is because of the difficulty of landing.

07 April 1915 : The Aeroplane same date pg 332 : Canada provides very little else but amusement as usual. From the "Daily Intelligencer," Belleville, Ont. :

—  
Aeroplane Visits Worry Kingston. 3 Last Week, and Another Yesterday. "Sinister End in View." Kingston, Ont., March 16th.—^ During the past 4 days four aeroplanes have been seen operating in this district. Last Friday three were seen operating over Lake Rideau, and yesterday afternoon another one was discovered in the same place flying towards Kingston. As there are no aeroplanes of the Militia Department in this vicinity, those which have been seen flying about here are thought to have some sinister end in view, either the destruction of property or the surveillance of the troops now in training here for overseas service. From the Calgary "Daily Herald," Ottawa, March 13th.

—  
The Dominion police are at present investigating reports which have been received from time to time from different points to the effect that aeroplanes have been seen flying above Canadian territory. From the "Daily Gleaner" (Fredericton, N.B.)—St. John, March 16th : Lieut.-Col. Armstrong has received orders to recruit volunteers for an aviation corps. No details are given of the plans of the corps. From the "Daily British Whig" (Kingston, Ont.)—Kingston, March 17th : Corporal Eugene de Boliac, of the Eaton Motor Machine Gun Battalion, Toronto, is the first aviator to respond to the British War Office's call to aviators in Canada to volunteer for service at the front. He is a Swiss, and has flown for Bl^ riot, De Lesseps, and Curtiss.

14 April 1915 : the aeroplane pg 360 : From the "Calgary Daily Herald" :— Calgary Boys in Aviation Service.—J. Turner Bone and Spencer Kerby, who left Calgary for England a short time ago with the view of joining the Aviation Service, have announced by Marconi-gram that they have both been appointed probationary flight lieutenants of the Naval Wing. Considering that these young men only landed in England a week ago, they are meeting with a marked amount of initial success.

21 April 1915 : CANADA.

"According to a message from Ottawa on April 14th 1915, volunteers for the Royal Naval Air Service are being called for in Canada. They must be under thirty years and preferably between nineteen and twenty-three. The Volunteers will be trained in Canada and sent to England. It would be interesting to know how Canada proposes to provide training of any kind for air mechanics." Source : The Aeroplane, 21 April 1915, pg 384

21 April 1915 : U. S. A.

An astonishing article, written by one Gordon Bruce, appeared, recently in the "New York Tribune," professing to deal with the "chin-wagging"—one can call it by no other name—of that "Captain" Janney of whom no one in this country seems to have heard. The heading of the article ran thus :

—  
"Veteran British Airman, Here to Train Canadian Recruits, Finds War Life Dull Except in Spots."

"Veteran" is good, considering that he has not flown in England, or—so far as one can gather—on the Continent either. The article continues :

—  
"Two ruddy-cheeked young men, attired in British uniforms, sat yesterday at the luncheon table in the Aero Club of America. One was Captain E. L. Janney, squadron commander in the Royal Flying Corps. He is fresh from the battle front. His companion was Lieut. Harley G. Smith. They are in America, on seven months' leave for the purpose of training recruits for the flying corps, which soon will be a part of the Canadian' forces.

"

This Janney is not even an officer of the Royal Flying Corps, and if he is still an officer in the British-Canadian Service one would like to know what he was doing in uniform in a neutral country if not an Embassy Attache or an interned officer. He is reported to have said :

—  
"My actual fighting experience covered a period of nine weeks. I was stationed with my squadron at Bailleul, in France, near the Belgian border. Most of the time it was rather dull. That is to say, (the percentage of time when we were actually doing anything was small."

So far as one can gather, the time when he was doing anything, except talk—if he was ever there at all—was nil.

Later on he said :

—  
"One feature of air fighting that has come to the fore rapidly is dart-dropping. Steel darts were first used by the French, but have come into general use among the British and German forces. I daresay that more damage can be done in the trenches by the dropping of explosive bombs, but the darts are more popular among the fliers."

This is a lie. The Royal Flying Corps hardly use darts at all. They regard them as rather unsportsmanlike and somewhat ineffective. He describes dart-dropping thus :

—  
"There is not much preparation required for dart-dropping. You just scoop them up and shovel them over the side." Which shows that he knows nothing about darts, which are not dropped in that way at all. He then proceeds to show his ignorance about aeroplanes thus :

—  
"The Taube, which is popularly supposed to be of moderate speed, is capable of 86 miles an hour. It is unable to climb faster than 750 feet a minute, as against 1,200 ft. a minute by



## Notes on "Civil Aviation"

the British machines."

Which is liable to bring a smile even to the face of a boxkite pilot. Then we come to the real business, for the article continues thus : "The business which has brought the two officers to this country is the establishment of an aviation training school at Toronto. Two Farman biplanes have been shipped from England for use by the students, and Captain Janney announced that he had purchased the old Farman machine owned by Clifford B. Harmon, of this city."

This was an aged 50-h.p. thing of 1911 type.—To continue :—

"The school is open to civilians who desire to enlist in the flying corps of Great Britain, and those who qualify will accompany the Canadian expeditionary forces. Four months are allowed for training. In order to be sure that the student will carry out his intention to enlist, a fee of \$500 will be charged for the training. This will be returned in the form of a bonus.

• of \$625, which will be paid by the Canadian Government when the student has qualified. The actual bonus is \$375, but there is a uniform allowance of \$250."

The \$500 is evidently the business which brought the two "officers" to the States. It is not the custom of the British Empire to take deposits from those desiring to serve it, and it seems improbable that any innocent American handing over his \$500 will ever see it again, or an aerodrome. The American is the most gullible person in the world—as anyone can judge by reading the advertisements in the American press

—  
but one hopes that no one has been silly enough to be taken in by this swindle.

Meantime, it is to be hoped that the Department of Military Aeronautics has already heard of this insult to the British uniform and has taken steps accordingly through the Foreign-Office to have a stop put to this adventurer's career.

Thanks are due to a firm of American aircraft manufacturers who sent the cutting with the sarcastic remark : "Captain Janney is going to make all our fortunes." But who is this "Gordon Bruce" who drags the Aero Club of America and a well-known New York paper in as evidence for the long firm game?—src - pg 384 the Aeroplane. April 21, 1915.

28 April 1915 : The Aeroplane pg 410 : The "Times" reports that the Canadian Department of the Naval Service has arranged with the British Admiralty for the training in Canada of candidates for the Royal Naval Air Service.

The flying school, which is being established near Toronto, will be in charge of Mr. J. D. McCurdy, the Canadian aviator.

The "Times" correspondent at Ottawa wired on April 21st :

"The Naval Department is being fairly inundated with inquiries from Canadians replying to the call for aviators for the Royal Aerial Service.

Mr. McCurdy was in conference with the authorities at Ottawa to-day, when arrangements were completed for starting the training of prospective recruits."

The choice is a wholly excellent one. Little has been heard of Mr. McCurdy of late years, for he never lowered himself to the status of an aerial acrobat or a country-fair mountebank. It will therefore surprise most people to learn that during the winter of 1908-1909, before anyone had flown any considerable distance in Europe, Mr. McCurdy and an American, Mr. Baldwin, flew over 1,000 miles in Nova Scotia on a biplane of a type evolved by them in collaboration with Mr. Glenn Curtiss. This machine started from and landed on the ice of a frozen harbour.

Since then Mr. McCurdy has been further associated with Mr. Curtiss, and on one occasion flew from Florida to Cuba on a Curtiss boat. As one of the great unadvertised pioneers of aviation, Mr. McCurdy, in the British Empire, deserves to rank with Messrs. Grace, Ogilvie, McClean, and Cockburn, all of whom are now serving the Empire, though Mr. McCurdy antedates all of them as a flier.

## Notes on "Civil Aviation"

28 April 1915 : The Alleged Aviator.

'The following note by one who knows him may assist those who come in contact with the subject of a recent article from the U.S.A. :—

The exploits of the famous, or infamous, "Captain" E. L. Janney are thrilling enough to make good copy for a short story. Anyone who could be more ignorant than this Janney on aviation matters would be ignorance itself. I have met him.

He introduced himself to me at Shoreham—a very undignified procedure for a "Captain," as, be it remembered, I am a person of no importance. The "New York Tribune" describes him as a ruddy-cheeked young man I should describe his cheek a little more vulgarly. (I have knocked about 'Aerodromes for many years.) He talks "Yank" more or less successfully, and is an adept at pulling legs. He pulled mine (I am an Englishman), for he asked me to join his Canadian Flying Corps. There was nothing in that, but—he asked me for £200 as a deposit for my uniform. There was something in that, but before the business was finally settled he had suddenly disappeared.

Not, however, before he pulled the legs of others, and packed an aeroplane, and took its measurements, and had a crate made, and nearly sent many of us crazy with "I guess that's good 'nough for me," and—oh ! and dozens of other things. Yes ! he did fly—as passenger in a box-kite.

What a sight it was ! A beautiful, brand new uniform with "Royal Flying Corps" written on it, a body inside it— "Captain" E. L. Janney.

It was a purely unpaid-for joy-ride—a flight obtained under false pretences. If the machine suited him he would buy it on behalf of the Canadian authorities ! I am sure the Canadian authorities would appreciate his ability in purchasing a two-year-old box-kite for war service.

There are many other little stories I could mention about "Captain" Janney, but if he wants them in print he must see the advertisement manager, as your paper is not published for the benefit of alleged aviators like the "Captain."

— "Sinro." - src: The Aeroplane 28 April 1915 pg 410

05 May 1915 : From "New York Times " :—

Greenwich, April 15th.—Capt. Janney, of the Royal Aero Corps of England, who returned recently from active service, has purchased from Clifford B. Harmon a Farman biplane equipped with a Gnome 80-h.p. (80-h.p. in this account, not 511 h.p., as published in The Aeroplane, April 21st) motor, which has lain idle for nearly three years. Capt. Janney, Lieut. Leigh and workman have been busy for several days in getting the machine ready for shipment to Toronto, where Capt. Janney has an aviation school. The pupils at the school are drilled for active service.

[It seems nearly time that "Captain" Janney became known in Canada and the U.S.A.—Ed C.G.G.] src - Aeroplane same date pg 440

12 May 1915 - The aeroplane pg 470 : .V Reuter Agency telegram from Toronto contains the following cryptic message :—"Twelve recruits have been enrolled in the Government flying school for training airmen for the British Army."

[It is not the custom to train "recruits" to fly, so it is a little difficult to understand exactly what is meant. One wonders whether this is another of the notorious "Captain" Janney's efforts.—Ed.]

26 May 1915 : The Aeroplane pg 542 : SITUATIONS VACANT.

WANTED, Fitters, Erectors, and men for all branches of aeroplane work. There are also vacancies for two good Foremen. Applications can only be entertained from men not at the moment engaged on this kind of work for other manufacturers. Applicants who have not already had experience in the construction of aircraft, but whose present trade would be of assistance, such as cabinet-makers, boat-builders, wireworkers,



## Notes on "Civil Aviation"

sheet metal-workers, welders, upholsterers, engineers' fitters, etc., etc., should also apply. The hours will be from 6 a.m. to 6 p.m., with overtime till 8.30 p.m., for those physically capable. Saturdays, 6 a.m. to 5 p.m. Sundays, 8 a.m. to 1 p.m. Good wages, with bonus on production. Fares paid to men stopping minimum two months. Long engagement to really first-class capable men.—Apply by letter, stating fully past experience, references, wage expected, to the Portholme Aerodrome, Ltd., St. John Street, Huntingdon.

EXPERIENCED FITTERS. —Fitter-erectors and Wiremen wanted in large factory building "Short" machines.

—  
Apply, stating experience and wages required, to Box No. 648, "The Aeroplane," 166, Piccadilly, London, W.

MISCELLANEOUS - AERONAUTICAL ENGINEERING.—Correspondence tuition in sections or complete course, 12 lessons.—British School of Engineering, 36, Maiden Lane, W.C.

HARDWOOD for Aeroplanes. Specially selected, air-dried timber as supplied to leading constructors in Britain and the Continent. Silver Spruce, Ash, Poplar ; Hickory and Ash Skids ; Three-ply ; Thin Cedar and Mahogany for Floats ; Walnut for Propellers.—William Mallinson and Sons, Ltd., Hackney Road. 'Phone, 3854 Central, 4770 Wall.

28 July 1915 - The Aeroplane, pg 115 - TO "TRAINED ENGINEERS".

The Aeroplane has been authorised to make the following announcement : — There are now vacancies for Examiners and Viewers in the Aeronautical Inspection Department, South Farnborough.

The total pay and allowances of Examiners varies between £3 14s. and £4 4s. per week, and of Viewers between 35s. and 48s. per week.

Candidates for Examiner-ships should be gentlemen having a good theoretical and practical training in engineering, and a knowledge of micrometer measuring instruments.

Preference will be given to gentlemen who are unfitted for military service.

These appointments provide patriotic men, having the necessary qualifications, with an unequalled opportunity to serve their country.

[One is inclined to envy the men who are so fortunate as to secure these vacancies, for the A.I.D. is not only theoretically one of the most necessary establishments connected with aviation in this country, but it is one of the most efficiently organised and managed, and is, therefore, highly effective.

A.I.D. inspection is primarily responsible for the extraordinarily small number of breakages in the air which have occurred to British-built aeroplanes since the department was established, and for the maintenance of the high standard of quality of British machines despite the rush of war work.

The balance which the Department has maintained between the desire for safety and the demand for quick delivery is very remarkable. Therefore, anyone who has the luck to join the Department now may be certain that his ability will be most usefully and efficiently employed, and that he will be able to work under the best possible conditions under highly intelligent and able senior officials. There is full scope here for the best class of man to serve his country in the most efficient manner.— C.G Grey.]

12 May 1915 : A Reuter Agency telegram from Toronto contains the following cryptic message :—"Twelve recruits have been enrolled in the Government flying school for training airmen for the British Army."

[It is not the custom to train "recruits" to fly, so it is a little difficult to understand exactly what is meant. One wonders whether this is another of the notorious "Captain" Janney's efforts.—Ed.— C.G Grey] src: aeroplane pg 470 same date.

17 May 1915 : On Monday, May 17th, H.R.H. the Duke of Connaught inspected the MacCurdy Aviation School. (Vide the Canadian Press in "general".) src The Aeroplane 16 June 1915 pg 626.

19 May 1915 : CANADA : "Mr. J.A.D. MacCurdy, the Canadian aviator, who, with Capt. Janney, is the director of the Military Aviation School in Toronto, was in Ottawa yesterday conferring with officers of the Naval services through which recruits will be enlisted. Work is to be started at once and there are over 100 applicants so far. Mr. MacCurdy will carry out the instructional work for the operations of both aeroplanes and hydroplanes (sic) at Toronto Island. He is authorised by the British Aero Club (sic) under

## Notes on "Civil Aviation"

whose direction the school is to issue certificates of qualification." - Montreal Daily Star, April 22nd, 1915 src: aeroplane pg 502 same date.

21 May 1915 : From the "Globe," Toronto, May 21st.—"Trials were carried out yesterday with one of the latest type of biplane, a machine capable of 85 m.p.h. The tests were made in the presence of two representatives of the British Government." One also gathers from the "Globe's" account that the tests were conducted on a local rifle range, the surface of which is very uneven and greatly needs levelling. src The Aeroplane 16 June 1915 pg 626.

25 May 1915 : 2 entries From the "Globe" of May 25th :

1. One of the three aviation schools in Toronto has received a request from an Ottawa lady for particulars of the fees for a course of training." src The Aeroplane 16 June 1915 pg 626.
2. Mr. Dean, accompanied by a pupil, met with a mishap on a flying-boat on his last trip. The motor-launch which usually accompanies the machine happened to be away when the flying-boat sprang a leak and the gasoline tank was empty. The water, to make matters worse, was rather rough. They succeeded in dismantling the wings and beaching the boat, none the worse for their experience. src The Aeroplane 16 June 1915 pg 626.

07 June 1915 - the aeroplane pg 547 : On "Arms and Services" : Various and sundry people who write about aeronautical matters without comprehending the constitution or work of the King's armed forces seem to be trying to revive the old foolish idea of a separate Air Service, distinct from the Navy and the Army, with an Air Minister in charge. They argue that aircraft are not a mere arm, but something in some mysterious way entirely different and superior.

It would be equally sensible to suggest a Ministry of Automobilism to control all the Navy's armoured cars, transport wagons, motor boats, submarines, and portable wireless plant, as well as the Army's mechanical transport, staff cars, motor-cycles, and so forth and so on, just because they all happen to be driven by internal combustion engines.

Aeroplanes and airships are simply new vehicles, differing only from land-going automobiles in that they operate in a third dimension. In other ways they do not differ from any other means of locomotion used by the Services.

The work they and their pilots and their passengers do is an integral part of the work of the Service to which they belong, and must be subsidiary

01- auxiliary to the work of the other units of that Service.

If Naval aircraft operate ashore they should, if they are to be of any real value, work in conjunction with the Army, and under the orders of the G.O.C. in-Chief, just as the R.N. division in the Dardanelles is merely there to do the work of infantry. On the other hand there is never any likelihood of Army aircraft working at sea with the Fleet, though they may assist in coast defence, just as the Garrison Gunners may do, or as the old Submarine Miners (Royal Engineers) used to do.

The link between the Royal Naval Air Service and the Royal Flying Corps can never be closer than that at present existing between the Navy and the Army, if each of the Flying Services is to remain efficient, and, for the same reason, a Ministry of the Air is as impossible a thing as would be a Ministry of Artillery, or, as already suggested, a Ministry of Automobilism.

\*\*\*\* A Possible Department of Aerial Communications\*\*\*\*

I would, however, make this distinct reservation, that when in the dim and distant future peace breaks out, and internal dissensions begin, it may be necessary to have a Minister of Aerial Communications, for purely civil purposes, whose duties would be analogous to those of the French Minister of "Ponts et Chaussées," or of our own Postmaster-General, or of a possible Minister of Railways—which we shall also have.

But such a Minister would have nothing whatever to do with the aircraft of the Navy or Army.

He would control civil aerodromes, look after pilots' certificates—which would entail the ability to fly properly.

He would see to the licensing of aircraft.

He, or, rather, his minions, would inspect aircraft with an eye to their fitness to be trusted over the heads of the terrestrial population, and so forth.

## Notes on "Civil Aviation"

Which looks like providing a comfortable job in the future for Lieut.-Commander Harold Perrin, R.N.V.R., now of the Armoured Car Division, as permanent Under-Secretary for such a department, for he would be just the man to teach each successive Minister his job.

Nevertheless, that has nothing to do with the absurd dream—or, rather, nightmare—of a separate Air Service.

### What is a Service?

It may, perhaps, be well to distinguish clearly between an Arm and a Service. The two great Services are, of course, the Navy and the Army, and sub-divisions of these may perhaps be called separate vServices, just as the Navy has the Submarine Service and the Royal Naval Air Service. The Army, on the other hand, apparently prefers to call its separate branches Corps, as in the case of the Royal Flying Corps, the Army Service Corps, and the Corps of Royal Engineers, though, in fact, each of these various Corps are quite as much Services as is the Royal Naval Air Service. The real distinction apparently between an Arm and a Service is that an Arm operates in conjunction with another Arm of the same Service, as aircraft and Cavalry work as scouts for the Main Army, or as Aircraft observe artillery fire, whereas a separate Service conducts its own manœuvres "in its own damper tinker fashion"—as the Admiral remarked to Mr. Kipling's friend, Mr. J. Moorshead, Sub-Lieut., R.N.—and according to its own rules, just as the Army operates separately from the Fleet.

Two Services may co-operate as the Navy and Army are co-operating at the Dardanelles, and sections of one Service may co-operate with another Service just as the Naval Brigade co-operated with the Army in the Khartoum Expedition, and as detachments of the Royal Naval Air Service are—more or less—co-operating with the Army at present.

In a general way it may be taken that a vService shall be able to conduct operations on its own account without assistance from or co-operation with any other Service.

Admitting this hypothesis, it seems obvious that an Air Service as such, apart from the Navy or the Army, is at present an impossibility. Further, it is impossible to see how a separate Air Service can ever become a possibility in the future, because the training of a soldier for land warfare and the training of a sailor for Naval warfare are so different that it would not be humanly possible for one man to become thoroughly competent in both branches of vScience. For which reason it will appear that even if an attempt were made to produce a separate Air vService, that Air vService itself would have to be split into absolutely distinct sections, one for Naval operations and one for Military operations, the former consisting of officers trained as sailors are trained, and the latter having its personnel trained in Military Science. Thus, it seems clear that aircraft must remain definitely as Arms of the two existing Services.

Cases in Point.

^hereof as a minor example, apart from the higher

Training of Service aviators in the Science of Naval and Military strategy and tactics, which is necessary to a highly practical officer, consider the case of a pilot trained as a soldier and handed over for naval work. He may be a first-class flier, and he may be able to handle big seaplanes quite nicely at the first attempt, when operating from the shore, but what kind of a fist is he going to make at first of bringing a 250-lb. seaplane alongside a ship in a seaway, and how long is he going to take to learn the tricks of getting alongside, hooking out, hoisting, stowing, and so on?

The seaplane-carrying ships have not an unlimited number of spare machines down at rail-head ready to be flown to the advanced base at half an hour's notice, as is the Army custom, and the pilot who "crashes" a big seaplane is liable to be spoken to in a manner not used to a military pilot who stands a B.E.; on its nose. Contrariwise, if a pilot is trained to navigate over the open sea during a six-hours' patrol, to alight in a six-foot sea, and to come alongside "handsome," what chance has he of learning to land a 90 m.p.h. "tabloid" in a live-acre field which can only be reached by doing a right angle turn between the pinnacles of the local cathedral and scraping over the roof of the sacristy? Some people argue that the pilot need only be a good aerial chauffeur, and so can acquire all the tricks of sea and land. Which may be true to some extent, but the best Service aviator is going to be quite a different animal.

Not a Chauffeur's job.

Already the best work, as scouts, as bomb-droppers, and as artillery "spotters," has been done by officers flying alone. In the future it will be even more so.

The specially trained air-officer will treat his aeroplane as a vehicle only. The act of flying will be the simplest part of his work. Every man with a gentleman's education will fly, just as he can ride a horse to-day. Nevertheless, the cavalryman's technical use of his horse is different from the gunner's use of him. And similarly the scout, the bomb-dropper, and the "spotter" will use different types of aeroplanes, and will handle them differently, in fact, it is already so to-day, for one finds some lucky pilots who have made reputations, actually with a regular stud of aeroplanes of different types for their own private use for different purposes.

One does not send a coachman to drive a cavalry scout's horse, and one will not send a pilot to fly an air scout's aeroplane. And, anyhow, why use two men in an aeroplane when one is enough?

The chauffeur's job will only come in with the fighting machines, for the gun-carrier will need a pilot just as the artillery need drivers who can handle horses but not guns. Even so, the sea-chauffeur is going to be different from the land chauffeur, just because the finest car-driver on the road would pile up the simplest motor-boat, through sheer ignorance of the habits of water, and vice versa.

So one sees that the technical training of the Air-and-Sea, and that of the Air-and-Land Services, must be

## Notes on "Civil Aviation"

essentially different from the highest to the lowest ranks.

### On Mr. Churchill's Opportunity -

If such a thing as a separate Ministry of the Air were a working proposition, which it is obviously not, the one person fitted to be head of such a department is Mr. Churchill, and one hopes in due time to see him the first Minister of Aerial Communications. — The great puzzle is how his intimate knowledge of aviation and all its workings may now be best utilised.

The history of Lancaster does not seem to have much connection with flying—unless it includes the sands at Waterloo, near Liverpool, the airship sheds at Barrow-in-Furness, and the aeroplane sheds at Bournemouth—Lancaster. Even if it did, the whole lot would seem very small beer to Mr. Churchill after the somewhat heady effervescence of the R.N.A.S. entire.

Still, aviation cannot afford to lose Mr. Churchill any more than Mr. Churchill could bear to give up aviation. I verily believe that Mr. Churchill is more keenly interested in the smallest "Schneider tabloid" than in the biggest battleship. He knows a great deal about the Navy, but he knows a great deal more about aviation in connection with the Navy. May a mere journalist venture a suggestion to the Cabinet?

### The First Air Lord.

Their Lordships of the Admiralty are of various kinds. There is the First Lord, a civilian, there is the First Sea Lord, a sailor, there are various other Sea Lords, each of whom controls his own department, water-tight below the surface but communicating — generally amicably—with all the others.

Would it be possible to form yet another department under an Air Lord, specially to deal with the Air Service, and to represent the Air Department in Parliament if necessary? If such a thing were possible Mr.

Churchill is obviously the only man for the job. He would have his work at his finger-tips, which is more than can be said of most heads of departments. He would have independent control, in so far as the Air Service would carry out independent operations in certain

fields of activity, such as raids and anti-aircraft defence, and so on. In other respects his department would co-operate with the rest of the Navy as an integral part thereof rather than be subordinate to it.

He would be free to concentrate the whole of his admirable mental activities on one job, with results which could hardly fail to be of the highest value, and he would apply himself to the work with the greater good will because it happens to interest him.

Those who know anything of the R.N.A.S. realise how highly Mr. Churchill is esteemed by all who have been concerned with the building up of that Service, and how deeply his loss would be regretted. The R.N.A.S. is destined to be the biggest semi-independent branch of the Navy, and no one is better fitted than Mr. Churchill to accelerate its progress towards its ultimate development. If he cannot be the first Air Minister, cannot he be First Air Lord of the Admiralty?

### An Old Idea Reclothed.

It has been suggested by the writer who displayed such gross ignorance about airships that a "National Air Service" could be formed with stations in various sea-coast towns for the express purpose of repelling hostile aircraft. This is a very old idea dating back to the period when the City of Liverpool endeavoured to raise a squadron of aeroplanes on its own account, and it was then shown fairly clearly that though a series of such squadrons of local aerial volunteers was quite a working proposition, the whole system would have to be under the control of the Admiralty or the Navy, whichever Service was responsible for coast defence, for the very good reason that these squadrons and their stations would have to be subordinated to the general scheme of defence, and co-operate with that scheme.

To form such a volunteer Air Service at the present moment seems obviously impracticable, because, in the first place, every available aeroplane is needed for active service abroad, or for existing coast defence stations belonging to the Royal Naval Air Service; and, secondly, because practically every man of an age to become an aeroplane pilot is merely waiting his turn to join either the R.N.A.S. or the R.F.C.

When the war is over, and we have time to reorganise our whole Naval and Military system, it is highly probable that the Royal Flying Corps will have its Territorial squadrons. Similarly, coast towns may have local detachments of seaplanes, manned by the R.N.R., or R.N.V.R., and under the control of the R.N.A.S. Here the First Air Lord would have still further scope for his activity.

## Notes on "Civil Aviation"

But, under existing circumstances, no scheme for forming localised squadrons of aircraft is workable.

The time will undoubtedly come when air fleets will be formed capable of carrying on war on a large scale in the heart of an enemy country, but, as already suggested, the units of such a fleet must have either a Naval or a Military (Army) training.

They cannot have both. — C. G. G. - the Aeroplane 02 June pg 550

02 June 1915 - The aeroplane : Mr. J. E. M. Pritchard entered as prob. flight sub-lieut. for temp. service, and appointed to the "President," additional, for R.N.A.S. src: "the London Gazette," May 28th, 1915.

09 June 1915 : Mr. Gordon Bruce, the author of the article on the notorious "Captain" Janney which appeared in the "New York Tribune," writes the following very sportsmanlike letter:—

"Dear Sir,—In your issue of April 21st you took occasion to refer to an article written by me, quoting a man who represented himself to be Captain E. L. Janney, of the Royal Flying Corps. The editorial comments accompanying your reprint of certain extracts could hardly be construed as complimentary to me. That, as well as the fact that several other reputable New York papers printed similar stories without drawing criticism from you, can be passed over. / However, perhaps I can answer your question, 'Who is this Gordon Bruce who drags in the name of the Aero Club of America and of a reputable New York paper like the "Tribune," etc.?' Also, it may be well to vouchsafe a few words of explanation as to the circumstances under which the story was written.

'I am the aeronautical writer of the "Tribune." As to my qualifications for the job you may consult any of the following gentlemen : Orville Wright, Glenn H. Curtiss, Squadron Commander John Cyril Porte, Royal Flying Corps; Lyman J. Seely, manager Curtiss Aeroplane, now at the Savoy Hotel, London; Lieutenant-Commander J. H. Towers, U.S.N. Naval Attaché at the United States Embassy, London ; Mr. Burns, formerly of the Austro-Daimler Motor Co., whom, I believe, you are acquainted with; Alan R. Hawley, President of the Aero Club of America; Captain Thomas S. Baldwin, New York; and Frank Hillier, of the London "Daily Mail." So much for that. [Commander Porte, R.N., is not R.F.C.—Ed.] 'As to the story to which you object—the man known as Captain Janney was introduced at the Aero Club of America by two responsible members. He was known to have purchased two aeroplanes and one motor, for which he paid cash. He was attired in what apparently was a British uniform which had the words 'Royal Flying Corps' worked on the collar. I am free to say that I was not well impressed with the personality of the man, and spoke of my feelings to several members of the Club on the day he visited there, but, on the face of it, everything appeared all right, and the story was too good to pass up lightly. Over here, we are not very familiar with your military regulations, and the wearing of a uniform signified nothing. It is a common sight to see foreign officers, in uniform, in New York.

"I can understand your viewpoint, nevertheless, and assure you that nobody is more loath to print anything that possibly could advertise a faker than I am. The history of aviation is too full of that sort of business already. If you will take the trouble to follow the "Tribune," I think you will find few instances where we are misled. A few days ago, I had luncheon with Orville Wright, and spoke to him of the matter. He recalled that the Wright representative, Griffith Brewer, had written him something of the alleged Captain Janney, about six months ago. If you will interview Mr. Brewer about it, perhaps some light will be thrown on the activities of the gentleman in question.

"It is a pity that there is so little communication between aeronautical writers in England and the United States. If there were more, doubtless fewer fakes would creep into the news. On my part, I should be glad to co-operate in any way to aid in stamping out questionable firms and individuals. In justice to me, I feel that you should publish my attitude as contained in this letter. You may use as much or little of it as you like. And I trust you will understand that I am for the legitimate and healthy extension of aeronautics and am anxious to do everything possible in the line of exposing frauds. (Signed) "Gordon Bruce."

[The writer desires to thank Mr. Bruce for the attitude he has taken up on this subject, and assures the Press of the United States in general, and Mr. Bruce in particular, that he will always be happy to co-operate in any action which is for the good of aviation. The United States offers a vaster field for the development of aeronautics than does almost any other portion of the world, and it is to be hoped that the American aviation industry will be placed on such a sound footing by the orders it is now receiving from the Allies that when the war is over it may progress on thoroughly sound lines.— C. G. G.]

### CANADA.

It is reported in "the Canadian Press" that a novel use of the aeroplane is under consideration by owners of sealing vessels, as a result of the failure of the seal hunt this year.

It is proposed that two experienced aviators be engaged to visit the east coast and the gulf of St. Lawrence respectively, just before the opening next season, and locate the herds. The information thus obtained would enable the fleet to sail directly

## Notes on "Civil Aviation"

for the scene of the hunt, instead of spending much time in searching for the animals.

\* \* \*

From the "Brandon Weekly Sun," Toronto, Ont., May 6th: Vice-Admiral Kingsmill has accepted fourteen students for the Curtiss aviation school, which starts instruction this morning at the western sandbar of the island. Graduates will be given commissions with the British Aviation Corps. [One gathers That this school is officially recognised and is in charge of Mr. J. A. D. MacCurdy. . Apparently it has no connection with "Captain" Janney.—Ed.]

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A correspondent writes, regarding the number of aeroplanes in Canada, that there is one Curtiss pusher biplane somewhere around Vancouver, B.C , and an old Henry Farman box-kite pusher near Winnipeg, Manitoba. Mr. \\\ iUiam H. Deans, of Toronto, Ontario, has a 1914 model Ctirtiss living boat. There is also a pusher hydro-aeroplane at Brockville, Ontario. Also a hydro-biplane owned and built by Messrs. Bead Bros, of Montreal, also a Bl ^ riot XI with 50-b.p. Gnome, owned by a French Canadian in the same city. The only one of these in use to-day is Mr. Deans' CurtisS flying boat, which in the hands of Mr. Theo Mc Cauley, the Curtiss Instructor, did a lot of flying on Lake Ontario, also two flights between Toronto and Hamilton.

Mr. Deans has opened an aviation school in Toronto with Mr. James A. D. McCurdy as instructor. The latter, the correspondent says, "was formerly with the Curtiss Aeroplane Co. of Hammonds-port, N.Y. He was also connected with Dr. Alexander Bell in his experiments an the early days of aeroplanes."

One is glad to see from the above that Mr. McCurdy is not connected with the swindler "Captain" Jannev, as certain Canadian papers stated.

\* • •

The "Toronto World" has been reading about Capt. Janney in The Aeroplane, and as a result the following appears on the front page of the issue of Thursday, May 6th :

—

What standing has Janney as flying teacher?

Does man who is conducting aviation school hold credentials?

Aeroplane's views - Official magazine picks New York interview all to pieces.

[Down to "pieces" all are headlines.]

What is the status of Capt. E. L. Janney of Galt, Ont., who is conducting an aviation school in Toronto?

Is Capt. Janney recognised by the Militia Department?

Does he hold a pilot's certificate?

Is Capt. Janney authorised to charge \$500 tuition fee to would-be airmen with the promise that after a nine months' course they will be refunded this amount along with \$125 bonus ?

[These last four demands are in display print.]

Judged by his optimistic talk, Capt. Janney appears to hold the key to the R.F.C., to be grasped by all pupils who wish to put up the sum of \$500. Capt. Janney came to Toronto more than two months ago from England and supposedly France.

On reaching New York he gave an interview to a newspaper man, which was published in the "New York Tribune" and the "Toronto World," regarding the establishment of a flying school in Toronto.

His statements have since been contradicted by The Aeroplane, a British periodical devoted to aeronautics.

This publication states that Capt. Janney 's views are slightly lop-sided or words to that effect.

Capt. Janney is an aviation enthusiast.

For some little time he conducted a motor garage in Galt, Ont.

A few weeks after the outbreak of war he got into communication with the Minister of Militia when the first Canadian Division was being mobilised at Valcartier, offering his services as an aviator.

At that time he was in New Bedford, Mass.

He told General Hughes that Iv; would fly to the camp.

At Sorel his machine broke down and he was arrested.

The authorities in that town had probably never before seen an aeroplane, and at that time the country was practically in a state of war. . "About two days before the boats left Quebec the aviator arrived accompanied by another airman named Webster.

It has been said that Webster handled the machine and that Capt. Jannev was merely a passenger.

Capt. Jannev was attached to the Headquarters staff and went to England on the steamer "Franconia" in one of the convoys.

When the contingent arrived on Salisbury Plain the officer (Capt. Jannev) was still attached to headquarters.

He, according to himself, "was to be in command of the Canadian Flying Corps" which was about to be established.

Lieut. W. F. (WILLIAM FREDERICK) Sharpe of Ottawa, who was killed a few weeks later (February 1915) while trying out a new machine at Shoreham Camp, and Lieut. Farr, a mechanic, were also to be in the flying corps.

For several weeks it was understood that Capt. Janney was negotiating with Ottawa with the intention of establishing a full flying corps, but, according to the Commander of the Department of Militia, balked at handing over \$120,000 which would have been the expense entailed.



## Notes on "Civil Aviation"

When Ottawa refused to lay aside this amount it was generally thought that the two Canadian aviators and the mechanic would become attached to the R.F.C.

1. Lieut. Sharpe, who (also) was an enthusiast and had some experience in California and other States, was killed,
2. Lieut. Farr joined the R.F.C.
3. Capt. Janney returned to Canada. Why did he return?

These are the facts :

In the latter part of December or early in January Capt. Janney obtained leave for a few days.

He said he was going to London and then France.

He was away from Salisbury several weeks, having overstayed his leave for some little time.

He was next heard of at Shoreham Camp, where one of the big British Army flying schools is located.

According to reliable information, he was parading about as a staff-major—one step above his own rank—and wearing the accompanying red lapels and staff badge on his service cap.

British officers, it seemed, could not quite swallow Janney's flamboyant utterances and sent an inquiry to the Canadian Headquarters.

As a result Janney immediately returned to Salisbury.

Very shortly after, his name appeared in camp orders to the effect that "he had been cut off the strength of the force".

Despite these facts, Janney, who was not wanted in the Canadian Division, is now in Toronto making an attempt to conduct a flying school—no flights have been made as yet - and to teach would-be aviators at \$500 each.

He obtained the use of property in N. Toronto, and it is also understood that he got some financial backing in order to establish his school.

The following article, which appeared in the British flying authority, *The Aeroplane*, in view of the above facts, is interesting.

[Then follows the whole of the notes on Janney which appeared in this paper. It is to be hoped that Janney is now "down and out".—Ed.]

• \*

The following extract from the "Daily Colonist" Victoria, B.C. may be only an echo of Janney, but if not the Admiralty would do well to explain itself, for the arrangement seems unusual.

No opportunity is offered in this country for "enlisted men" to receive \$375 dollars (; ^ 75 ^ il they become pilots at their own expense.

The extract runs :— "Ottawa, April 23rd.

The Department of Naval Service has received over seventy-five applications in response to the appeal for Canadian recruits for the army flying service, Ottawa sharing with Toronto the honour of providing the largest number of would-be airmen. Mr. J. A. D. McCurdy, the expert who will supervise the training of the new men who are accepted, and who is authorised by the British Aero Club to grant pilots' certificates to recruits who show themselves qualified, has been in Ottawa for a couple of days.

"This training is being done at the expense of the recruits themselves, who, if accepted for service, will receive practically the whole cost of their training back as a grant from the British Admiralty.

[Why should the Admiralty pay for men for the "Army flying service?"—Ed. -*Aeroplane*.]

"All applicants will have to pass a medical examination by a board of examiners, and once he has passed the board he is an enlisted man, subject to discipline and under the control of the British Admiralty.

"The Canadian naval service department is acting as a recruiting agent for the British Government. Volunteers under 30 years of age are called for, and if accepted by the medical examiners are trained by the companies' teachers at a cost of \$400 each. This fee is paid by the pupil, but the money is refunded to the amount of \$375 by the British Government when he reports in England. When the pupil has been granted his pilot's certificate by the school, he is sent to England for further training, and his fare (to England) is paid by the British Admiralty." [Candidly we do not believe it.—Ed. *Aeroplane*!;.]

» »

A Canadian in Government employ writes :—"I knew an E. L. Janney who owned a garage in Gait, Ontario. He owned it for about eight months then collapsed beneath a pile of hotel bills accumulated in New York, Toronto, Buffalo, etc..

The last time I saw him he was racing from Galt towards the American line.

I learnt afterwards that he was in the hands of the police.

After the bankruptcy proceedings I lost sight of him.

[Evidently the same Janney who bluffed the Canadian Government and the Aero-Club of America, but not the simple-minded



## Notes on "Civil Aviation"

British officer-aviator. This Janney has now been fairly effectually exposed, and one hopes it will not be necessary to refer to him any more.—Ed.] Aeroplane 09 June pg 589-592

A Canadian reader of "The Aeroplane" writes :—"I have been a reader of your magazine for a considerable period, both at home and abroad. I have been very much absorbed in some of your topics, and amused at some of your jokes, but I can truthfully say that when I read the account re Capt. E. L. Janney under the 'Canada' heading, I was amused and interested at the same time."...

The writer of the letter goes on to state that the original Canadian Flying Corps was composed of three men:

- 1) Capt. Janney,
- 2) 2) Lieut. Sharpe (who was killed at Shoreham last month), and
- 3) 3) Sergt.-Major H.A. Farr ;

also there was a Burgess-Dunne biplane, good for at least 40 m.p.h. in a calm.

This machine now reposes in a shed on Salisbury Plain, and is not even a vision of its former self, not (even) through any accident, for it has never been flown in England, though it flew much in the United States, being used by the Burgess Co. as a demonstration machine for "---steen years," as he puts it.

There is, however, a good Curtiss O.X. motor rusting away, and only needing an overhaul.

Apart from this, the "Canadian Flving Corps" now appears to consist of the Sergt.-Major only, without an aeroplane, for the last heard of Capt. Janney was that he was on his way to Canada, as "plain civilian Mr. Janney", it having been announced in orders that he had resigned his commission.

It is stated that

- 1) he was never in the R.F.C.,
- 2) 2) he has never flown in England—not even as a passenger, and
- 3) 3) he has never been "on service" on the Continent.

There seems to be an idea in Canadian circles that the R.F.C. will not undertake to train any more Canadian aviators since the death of Lieut. Sharpe. - Source : The Aeroplane, 10 March 1915, pg 230.

Interestingly, the records for Sergt.-Major Farr, a man who was known to have joined Capt. Janney's "Canadian Aviation Corps" and who was from British Columbia.

A little effort and some digging thru the "Old Paperwork" records of the Commonwealth Forces of WW1 revealed the following facts about "Sergt.-Major Farr" :-

S/Sgt. Farr, Harry Arthur ser. no 1840 (File # 5755-H22) - Aviation Corps - seconded (from what?) ,

Date of enlistment "For the Duration of the War" with the "Flying Corps" of 22 Sept. 1914.

Examined in Valcartier, Quebec on 23 Sept. 1914 (where his weight was measured to be 130 lbs)

Came "On-Strength" on 7 October 1914.

His official record reveals that after serving 91 days with the "Flying Corps" at a pay rate of \$1.80/day he was "Discharged - England, due Flying Corps being Disbanded" effective 7 May 1915 (stamped by the Sub-Record Office, Canadian Contingent) and his discharge papers reflect his home address as "Qualicum Beach, BC".

His personnel record at the time of his discharge from the British Army - Div. HQ in Thorncliffe, UK as an "Aviator" reflects he was born in Dunstall, East Staffordshire, England, and was 27 years of age, stood 5'-3" had grey eyes, black hair and was of dark complexion and of "Good Character" (his penmanship was also excellent!) as witnessed by a Captain Kirkby.

The British Army records that reflect this data are Form #'s B103, B178, B268, 495-DP-100M-6-19, W-22-100M-7-18, 200M-2-21.M, W2589. His record also reflect that he was also mis-named in the paperwork as "Farr, C" which may have meant "Farr - Canadian"... and yet in Canada NOTHING is known about this particular gentleman ... and he is forgotten.

Earnst Lloyd Janny / Janney

Spouse Pearl Margaret Metz 1886–1928

Birth Day & Month:	16 Jun
Birth Year:	1893
Birthplace:	Ontario
Relation to Head of House:	Son

## Notes on "Civil Aviation"

Father's name:	William Janny
Mother's name:	Elizabeth Janny
Racial or Tribal Origin:	English
Nationality:	Canadian
Religion:	Methodist
Province:	Ontario
District:	Waterloo (south/sud)
District Number:	122
Sub-district:	Galt (Town/Ville)
Death Date	12 Apr 1941
Death Place	Winnipeg, Manitoba, Canada

23 June 1915 : Under the heading of "Here's some news that we have missed," the "Calgary Herald" tells the following extraordinary yarn :—

•

Buffalo, May 27th, Lieut. E. H. Bequer of the British Royal Flying Corps explained this morning the flight over Buffalo of an aeroplane seen by hundreds three months ago.

Lieut. Bequer admitted he had piloted the machine, starting at night from an English transport twenty miles off Long Island for his cross-country flight to Vancouver. He landed only once in the United States two hundred miles north-west of New York, because of engine trouble. He said he passed over Buffalo at a height of 3,000 feet, about daylight. " His flight over Canada, made in four days, was uneventful, and his orders sealed the lips of Canadians at the few points where stops were made.

This absolute secrecy, he said, was to enable him to check (Stop) the plot to bombard Vancouver from an aeroplane to be released from a German vessel in the Pacific.

Secret service men, he declared, in the Canadian seaport unearthed the plot through conversation overheard among German citizens.

"I had been there three days," said Bequer, "waiting at my station on Vancouver Island for the threatened raid when the enemy's machine appeared and I went out to meet it. We clashed only thirty miles from Vancouver and both opened fire. "They got me in the leg. That interfered to some extent with my manipulation of the controls, but we kept at it. When another bullet struck my abdomen, however, I was beaten and flew with all the speed of my machine, landing safely. The German machine turned back to sea as [ approached land.

Bequer exhibited scars of his wounds. He arrived at the East Buffalo Stock Yards late last night with 60 horses for the British and French forces. After landing his horses in France, Bequer will rejoin the Flying Corps at the front. Questioned closely as to the truth of his claims, Bequer showed his orders and copies of reports and declared censors had suppressed all details of the trip and his battle in the air.

"When the war started," he said, when asked about the mourning on his arm, "I had four brothers and two sisters. To-day, only my mother and I are left. My father, a retired officer, and his wife are all dead—the last at Neuve Chappelle. Stray bullets got the girls, who were Red Cross nurses."

[In spite of all their alleged "cuteness," the denizens of the Western Hemisphere seem to be the most gullible people in the world. Even a European News Agency would not have dared to perpetrate a story of this calibre. There is, of course, no Lieut. Bequer in the R.F.C. — Ed.—] *The Aeroplane*, pg 656

11 August 1915 : *The Aeroplane*, pg 155 - THE GIRDER QUESTION.

When one comes to consider the building of really big machines the multi-plane has obvious advantages.

## Notes on "Civil Aviation"

Compression stresses on spars can be divided up among a number of small spars, each carrying effective lifting surfaces, instead of concentrating the whole load into the inner bays of the upper spars of a biplane of enormous span. Thus more surface can be got with far less weight.

It may be that Mr. Horatio Phillips' "Venetian Blind" type of aeroplane will still justify his faith—not, perhaps, because the number of feet of entering edge is the chief thing to be desired, but because there may be a natural limit to the depth of chord of an efficient wing, owing to some natural law pertaining to the elastic limit of air. A limit to the depth of chord seems to imply a limit to span, from pure engineering considerations, apart from the trouble in housing and handling a very big aeroplane. And limit of span and chord places a definite limit on surface, unless surfaces can be superimposed with advantage.

### DIAGONAL STAYING.

When one starts to consider really big triplanes one begins to think of machines in which both struts and wiring are abolished and their work is done by accurately streamlined steel tubing placed diagonally.

An attempt in this species of staying" was made in an Albatros at the Paris Aero Show of 1912, but it was not worked out properly. Anyway, in small machines steel tubes have to be so light that they are always in danger of buckling from local stresses, such as a clumsy workman dropping a spanner, or a collision in the air with a bird (which has actually buckled a steel-tube strut in a seaplane) to my knowledge. But when one comes to big machines in which a certain amount of metal is necessary to take big flying loads, that amount of metal may be so disposed as to take local stresses as well, and then we come to the period of proper engineering construction and something like all-round efficiency.

01 October 1915 - The Aeroplane, pg 402 : A SELF-CONSTITUTED INSTITUTION.

The following notice, which appeared in the "Times" of October 1st, will be read with interest by all, and possibly with amusement by some, concerned with the Flying Services and the aircraft industry :—

At a meeting held at the Royal Society of Arts yesterday, over which Sir William M. Ramsay presided, it was decided to inaugurate "The Aeronautical Institute of Great Britain," which will have three principal functions:

1. aircraft production,
2. aeronautical progress,
3. aeronautical propaganda.

The first work of the Institute will be to develop its first function of aeronautical production by the establishment of an Aeronautical Production Committee.

The proposed method of working such a Committee was explained by Colonel F. N. Maude and Mr. L. Blin Desbleds. It will aim at immediately increasing the country's rate of aircraft production mainly in the following manner, which, it was declared, would interfere with no existing arrangements, Governmental or other :

- (i) To organise a Central Bureau which would render possible the (voluntary) co-operation and co-ordination of the aeronautical industry, thereby enabling the execution of larger orders than is at present the case.
- (ii) To give the financial institutions of the country special technical assistance not otherwise obtainable, thus linking up finance with the aeronautical industry and thereby further increasing production.
- (iii) To make arrangements for the best utilisation possible of the existing labour, and for the training of as many men for aeronautical work as the situation demands.

The whole function of the Institute will be during the war to speed up production by organisation in every direction.

The meeting was well attended, and among those who had accepted the invitation to be present were :

Sir Frederick Pollock, the Hon. W. P. Schreiner (High Commissioner for the Union of South Africa), Professor W. C. Unwin, Sir Philip Magnus, M.P., Sir Charles Macara, Sir George Taubman Goldie, Mr. W. Nelson Mitchell (chairman of the Imperial Tobacco Company), Sir Leo Chiozza Money, M.P., Mr. Charles Bright, Sir Alfred Pearce Gould, F.R.C.S., Sir R. W. Burnet, M.D., Lord Hill, Lord Claud Hamilton, M.P., Mr. Basil Peto, M.P., Mr. A. S. E. Ackerman, Mr. Robert Mitchell (Director of Education, the London Polytechnic), Sir Alexander Pedler, and Mr. Evelyn Wrench (hon. secretary and organiser of the Overseas' Club).

The idea of co-ordination and co-operation in the aircraft industry is an old one. It was suggested in this paper some months ago, and when the Aero-Committee of the Society of Motor Manufacturers and Traders was formed some years ago the germ of the idea existed.

Apparently, the aircraft industry does not desire cooperation in any form, any more than does any other English industry. Free competition between firm and firm, on a more or less friendly basis, seems to be inherent in the English mind. Even agricultural cooperation does not flourish in England, and makes greater proportional headway in Ireland—in the latter country this may be accounted for by the fact that co-operation partakes of the nature of conspiracy, and

## Notes on "Civil Aviation"

so fits the Celtic temperament.

One may coerce an Englishman, or discipline him, or cajole him into following a leader, but one cannot persuade him to co-operate voluntarily with his fellows, possibly because of that intense individualism which makes it an article of faith with every Englishman that he is "as good as the next man, and a damned- sight better"—as a workman once put it to me. That is why Saxon England was a Heptarchy—which was much the same as an Anarchy—in the period between Roman coercion and Norman discipline. Therefore, one may wash out any idea of co-operation in this or any other industry, unless co-operation is forced on industrial England by the Government.

### THE RIGHT PEOPLE.

However, as regards the Maude-Desbleds effort, it seems at best unnecessary. At worst, it is an impertinence. For, apart from the fact that no one whose name has appeared in connection with it has any obvious qualifications to teach either the Government, the industry, or the workman, anything connected with the use or construction of aircraft, there already exist bodies which could do the work if it were needed. The Aeronautical Society is the recognised technical authority, and though it has been in a state of suspended animation since the outbreak of war, it can be resuscitated whenever it is needed. I believe that the Secretary is employed in the Censor's department with special reference to aeronautical work—if so, I am sure he makes an excellent censor, for he certainly knows the technical end of his job—but if the Government needs a Central Bureau to "render possible the cooperation and co-ordination" of the industry, he can run it from the Aeronautical Society's office better than anyone connected with the grandiloquently self-styled "Aeronautical Institute of Great Britain."

Somehow, that title sticks in one's gullet. It reminds one of Patent Teeth Institutes, and Massage Institutes, and Institutes for supplying Trusses for the Ruptured, and Crutches for the Crumpled, and such things : Institutes which look like charities till one finds that they charge more than ordinary dentists, doctors, and shops, and do not give as good value even then. On the whole, I think the aircraft industry will do well to fight shy of the "Aeronautical Institute of Great Britain" till it can prove that it is not merely supported by fumistes and "limeighters," and is a serious scientific institution approved by those controlling the Flying Services, and regarded with favour by the Councils of the Royal Aero Club and of the Aeronautical Society. Meanwhile, it had better be left to work out its own salvation, or damnation.— C.G. Grey.

### 30 June 1915 : England : THE REPORT OF THE ADVISORY COMMITTEE.

The (Imperial British) Advisory Committee for Aeronautics issued its report for the year 1914-15 last week. Owing to the war it is natural that little definite information should be given, but the general lines on which research is being carried on are of interest to those concerned with aviation.

The ACA Report states that

1. during the absence of Major-General Sir David Henderson on active service, Colonel Sefton-Branker, Deputy Director of Military Aeronautics, has acted as the representative of the War Office.
2. Continued progress has been made during the year in the consideration of the stability of the aeroplane.
3. A large amount of attention has also been given to improvements in details, both aerodynamically and constructionally.
4. Important additions have been made to the equipment of the National Physical Laboratory.
  1. The large air channel (wind -tunnel), 7 ft. square in section, has been completed, and is in use - an air speed of 65 ft. per sec. (roughly 44 m.p.h.) can be reached. The work done in the air channels has included tests on:
    1. models of airships, and airship appendages,
    2. aeroplane wings, bodies, fins and rudders, tail planes and elevators, struts, wires and other aeroplane parts, and on
    3. models of complete aeroplanes.
  4. Investigation of the stability of the aeroplane has been extended to the case of a machine turning, whether moving in a horizontal plane, or in a spiral path. The analysis involves the solution of algebraic equations of the 8th degree, and the methods applicable to the solution of such equations have been developed with a view to the reduction of the labour involved. The machinery thus provided will, it is hoped, be of assistance to other workers on the subject.
  5. Interesting results have been obtained as to the influence of turning on the longitudinal stability, and on the tendency to the form of instability known as the "spiral dive."
  6. Some of the experiments on complete models in the air channels have been directed to obtaining data required in connection with these investigations relating to stability, and for the design of the controls.

## Notes on "Civil Aviation"

A large amount of this work has been carried out at the request of the Admiralty and the War Office, to supply information needed for improvements in the construction and design of machines. Systematic research has been continued to secure increased aerodynamic efficiency in all parts.

2. In connection with the researches on light alloys, a rolling mill has been provided at the National Physical Laboratory, to enable the practical working of light alloys to be studied.
3. Apparatus for tests of air-screws in the wind channels have been installed.
4. Apparatus for tests of new (landing) gear and attachments for tests of seaplane floats in the William Froude National Tank have been installed.
5. Apparatus for strength tests of large samples of aeroplane and airship fabric have been installed.
6. Further tests on air-screws have been made on the whirling arm, both for the Admiralty and for the War Office. These tests have brought out points of importance, and experiments are proposed with a view to the improvement of the methods of calculation applicable to air-screws and to securing a means of predicting more accurately the performance of an air-screw under various conditions of use.

In continuation of the inquiry into the strength of aeroplanes, methods have been devised for the calculation of the stresses in the wings and bracing of aeroplanes, and have been applied to the determination of the stresses occurring in special types of machine. The methods of calculation applicable to more rigid structures require modification in relation to so flexible and elastic a structure as that of an aeroplane, and the method of "strain energy" has been developed and applied for this purpose. It is hoped that the results of this work will be of assistance to designers.

At the request of the Superintendent of the Royal Aircraft Factory, experiments have been made on the fatigue strength of stranded cables, passing over pulleys of relatively small diameter.

By desire of the War Office an investigation has been undertaken with regard to autogenous welding, and the precautions to be observed in its employment in aeroplane parts.

Fatigue tests of a wing spar which have been in progress over a considerable period have recently been completed.

A large number of cases of fracture of aeroplane parts, especially of parts of engines, have been investigated at the request of the Admiralty and of the War Office. It has led in many cases to suggestions for improvements in design which have been brought to the attention of manufacturers and have, in some instances, revealed undesirable variations in the composition of the materials employed in manufacture.

Tests have been continued in the William Froude National Tank on models of floats for seaplanes, and improvements have been made in the methods of tests and the apparatus employed.

Useful information has been obtained from experiments carried out by the Admiralty on machines 'fitted with floats designed in accordance with the results obtained in the model tests, and the report made to the Committee by the officer who carried out these experiments emphasises the value of the investigations made in the tank.

An increased volume of work has been dealt with relating to airship and aeroplane fabrics, methods of proofing, dopes, etc. Special attention has been given to the strength required in aeroplane fabrics, especially under the conditions of service and exposure. The stresses which may occur in the fabric on the wings of aeroplanes under various conditions have been more fully investigated, and a series of bursting tests on aeroplane fabrics has been carried out for comparison with the results obtained from tensile tests.

The Committee desire to thank Mr. T. Jackson Greeves, of the Port-down Weaving Company, Limited, for assistance in these tests. Investigation as to "deciding upon standard conditions in tests of fabrics", especially un-doped fabrics, has been completed, and it has been possible to specify conditions for the contractual testing of aeroplane fabrics which increase rapidity of test and uniformity in results. These conditions have been adopted as standard for War Office specifications.

Other matters under consideration by the Committee include sighting appliances for use on aeroplanes, and accuracy i.e. bomb-dropping. Special investigations for the Admiralty and the War Office include the analysis and examination of deposits on airship envelopes, and tests of magnetos for wireless installations to determine their liability to ignite explosive mixture\* of gases.

A report on Gyroscopic Theory has been prepared by Isir G Greenhill, and was issued in December last. Full Scale Work at the Royal Aircraft Factory.

The investigations at the Royal Aircraft Factory of design of new or modified types of aeroplanes, and improvement of existing types, have been closely related to military requirements.

## Notes on "Civil Aviation"

In particular the theoretical study of stability, and experiments on models associated therewith, has been tested and demonstrated on full scale aeroplanes.

Reports from the Expeditionary Force have indicated:

1. the advantage of attention to strength in all "details" of aeroplanes, and
2. the advantage of attention to good construction in all "details" of aeroplanes.
3. in consideration of flattening out after a steep dive, the "margin of strength exceeds that specified as required" in all machines now designed.
4. The consequent increase in weight has to some extent been compensated by other improvements, and by increased aerodynamic efficiency.

In military use, further increase in strength has to be considered in relation to other factors affecting safety, in particular the merit of rapid climbing tends to safety of a different kind, and limits the increase in strength and weight which might otherwise be adjudged desirable. [That is to say, there needs be a "factor of safety against being shot" owing to inability to climb to a safe height, as argued long ago in this paper.—Ed.]

In accordance with suggestions made by the Committee to the War Office, the use of autogenous welding (where no additional filler rod is used and the weld is formed entirely by melting the parts together) has been dispensed with (stopped) in the manufacture of parts under stress.

Many other matters of detail, both in design and in construction, as affecting strength have also received attention.

Tests of new designs have shown that it is possible, without sacrifice of controllability, to make the aeroplane inherently stable and capable of flying satisfactorily without use of the controls.

Improvements have been introduced in:

1. the shape of the body and engine covering,
2. in tank capacity,
3. in the x-section and attachments of wires, and in
4. many other ways.

Experiments on alighting gear have been continued, and two standard types adopted as suited to special requirements. [Can this mean the simple V chassis to increase speed?—Ed.]

New types of machines have been designed embodying "special features" which recent military experience has shown to be desirable. In all of these it has been found possible to secure stability under ordinary conditions. [Possibly the big fighting machines mentioned by Mr. Tennant.—Kd.]

Wireless and other signalling apparatus has been designed, and bomb-dropping gear has been fitted and investigated. Experiments with engines have been continued, and four types of engine for different purposes have been designed [By the R.A.F., which denied that it was competing with engine makers? —Ed.] and are being produced by various manufacturers for use in standard aeroplanes. Much work has also been carried out in conjunction with makers of other types of engine in this country, and the experience gained in the testing and repair of engines used on service machines has thus been rendered of material assistance in the improvement in detail of existing types.

Increased accommodation has been provided for in the instrument department.

The work of the factory in this respect involves a considerable amount of routine testing' of instruments for use on aeroplanes, which can now be dealt with more rapidly.

Improvements have been made in the standardisation of dimensions and methods of attachment of instruments, so that those of different makers can be readily attached to standard instrument boards or supporting panels.

Attention has been given to the clear marking of, and to the lighting of, instruments, and a dashboard lighting set has been produced.

A thorough investigation has been made into the sources of compass error on the aeroplane, and a full report on the work has been presented to the Committee.

The manometer and recording instruments for tests of full-sized air-screws on the whirling arm have now been fitted, and tests have been made. Owing to shortage in the power it is not yet possible to obtain full speed conditions, but with

## Notes on "Civil Aviation"

some air-screws forward speeds of up to 55 miles per hour have been reached, corresponding with the climbing speeds of certain aeroplanes. It is hoped shortly to increase the speed.

### Naval Work.

Close co-operation has been maintained between the experimental department at Teddington and the Air Department of the Admiralty.

The Committee is indebted to the Air Department for assistance and information with regard to work on airships and aeroplanes, in relation to the experimental investigations on models.

The Committee has received from the Air Department requests for investigations of the air pressure on airship sheds, tests of wind-screens, investigations relative to fabrics, and to the material and design of parts of aeroplanes and of engines.

In July, by invitation of the Air Department, the Committee visited Naval Air Stations to inspect naval airships, naval aeroplanes and seaplanes, and to examine certain questions on naval machines in flight.

At the end of 1913, the experimental work in meteorology was moved from Pyrtton Hill to new quarters in the Royal Aircraft Factory at South Farnborough. This involved the organisation of an observing station for obtaining continuous records of pressure, temperature, humidity, rainfall and sunshine, with regular observations for the purpose of control, of frequent observations of air currents at different levels by means of pilot balloons, and of arrangements for the supply of charts, forecasts and other information to the Aircraft Factory, and to the naval and military wings quartered at South Farnborough.

The Commandant at Upavon has arranged for the reciprocal checking by the meteorologist at each station of the special forecasts issued by the other.

The Meteorological Office at South Farnborough is administered as a branch of the Office at South Kensington, and its normal staff consists of:

1. a meteorologist provided by the Meteorological Committee,
2. a professional assistant provided through the Advisory Committee, and
3. a boy provided by the War Office.

Further progress with experiments in meteorology has, for a time, been postponed. - The aeroplane 30 june pg 689.

10th August 1915 : Maurice Baring : RFC HQ : When General Trenchard took over, the R.F.C. consisted of three Wings and a Headquarters.

The first thing Trenchard wanted Baring to do was to make notes for him.

The General's system of note-making was like this.

1. He visited Squadrons or Depots or Aircraft Parks as the case might be and took someone with him who made notes (for the next four years the someone was Baring) of anything they wanted.
2. In the evening the notes used to be put on Trenchard's table typed, and then he would send for the various staff officers who dealt with the matters referred to in the notes, and discuss them.
3. The first thing Trenchard would ascertain was if the matter mentioned in the note had a real foundation ;
4. for instance,
5. whether a Squadron which complained that they were short of propellers had not in fact received a double dose the day before.
6. If the need or the complaint or the request was found to be justified and reasonable Trenchard would proceed to hasten its execution and see that the necessary steps were taken.
7. If the requests were found to be idle or baseless the Squadron or the petitioner in question would be informed at once.
8. But where Trenchard differed from many capable men was in this :
9. he was never satisfied with investigating a request or a grievance or a need or a suggestion.
10. After having dealt with it he never let the matter rest, but in a day or two's time he would insist on hearing the sequel.
11. He would find out whether Squadron B had received its split pin or what Mr. A. had answered from England when asked for it.

This did not conduce to our repose, but it did further the efficiency of the R.F.C.

The first long expedition Baring went with Trenchard was on August 22nd to the Third Army, where they visited No. 8, No. 4 and No. 12 Squadrons. But the first notes were made the 24th of August, when they visited the first Wing. Baring's note-book for that day reflect:

1. Trenchard wanted Oxford marmalade for breakfast (there was Oxford marmalade for tea on Trenchard's table the next day)
2. the road near No. 3 Squadron is too dusty, and steps must be taken to remedy this.
3. the first Wing are not to press at present to send observers home to learn to fly.
4. Christie wanted more double clips for the elevator control.



## Notes on "Civil Aviation"

5. There is also something not quite legible with reference to R.A.F. wires and
6. Crossley spare axles.

The General never referred again that year at least to his initial talk with me as to whether I should be of use to him or not, but when on the 24th of August, the day after he said he liked Oxford marmalade, there was Oxford marmalade for tea, he said to me, looking at it : "I see you have got a memory ; I shall use it."

The men of the RFC missed General Henderson very much, and the General told me he missed his influence with the armies. The Coldstream Guards were billeted quite close to us on the road to Boulogne at this time.

Baring's nephew, Dermot Browne (killed at Loos on September 29, 1915) who was in the Coldstream Guards came to dinner with us, with John Ponsonby, who almost immediately after this became a Brigadier, and one night I had dinner at his Headquarters.

On September 2nd Baring went with Trenchard to Paris.

I Baring's notes reflect : "must bring back some paper felt washers for induction pipes of Le Rhone engine"

They went to the Paris Aviation Office and afterwards to Darracq's Works.

Trenchard had an interview with General Hirshauer, who commanded the French aviation On September 3nd, but he went with Colonel Leroy-Lewis, the RFC military attache, and Baring was not present.

They also went to the Morane factory, returning to St. Omer on September 5th, stopping at one of the Squadrons on the way.

In September 1915 the RFC had one Aircraft Park to supply the needs of the Squadrons in the field. It was scattered about in various places at St. Omer. Trenchard's idea, which he carried into effect shortly after this, was to have one Aircraft Park for the Squadrons serving each Army what were afterwards the Brigades.

We went over. Baring's notes of the visit to the Aircraft Park on September 8th reflect that the Banjo clearances were wrongly adjusted when they came out.

The next day the two Wing Commanders, Colonel Ashmore and Colonel Brancker, came to luncheon, and we went to the Aircraft Park with them.

On the 21st the bombardment began. I went with the General to all the Squadrons in the first Wing.

We visited seven Squadrons, two Wing Headquarters, and one Aircraft Park.

It was an exhausting day, and produced a harvest of notes.

Baring's notes of the 21 September visit reflect :

- A. No. 1 Squadron want a Le Rhone false nose-plate, complete, with pinion and ball-bearing.
- B. No. 2 Squadron have no V-typed under-carriages in the Squadron.
- C. No. 3 Squadron wants Ball-race No. 25 x 55 x 21 J for false nose.
- D. No. 6 Squadron want:
  - A. oval tubing-steel, 3/4 - 3/8
  - B. a front left-hand top-centre section of Fish-plate for a F.E. 2.A.
- E. No. 10 Squadron :
  - A. leave their machines out in the sun.
  - B. One machine, which was shot, is hung up for a cross-tube, under the fuselage, holding the sockets of the bottom-plane.
- F. No. 16 Squadron want fish-tail clips, and hot air-pipes for the Zenith carburettor.

Baring's notes of 22nd September reflect arrangements were made about wireless:

1. valve-prefixes,
2. shortwave- tuners,
3. the tactical call,
4. the sterling-set transmitter,
5. the short-wave tuner, etc.



## Notes on "Civil Aviation"

On the 9th of October, in the afternoon, we had a glorious exhibition of machines. Each squadron sent a machine fitted up with its pet gun, mountings, and gadgets and one got the prize.

The following questions were dealt with :

1. Bomb sights.
2. Camera.
3. Incendiary bomb-tubes.
4. Wireless reel.
5. Bomb-barrier fittings (standard position close to fuselage).
6. Release gear (cam gear for releasing bombs).
7. Gun mountings.
8. Ammunition.
9. Wireless accumulators.
10. Wireless instruments.
11. Signalling keys (they must be inside **radio box** ?).
12. Heating of carburettor.
13. Holes in planes.
14. Colour of cowl.
15. If / when extra tanks are carried: petrol, oil, pump, instruments, control pillar.
16. Map case.

On the 21st of October Baring went on leave and stayed in London, returning to St. Omer on the 28th. The Fokker scourge was at its height. Baring notes that "The Germans had made an exact copy of a French Morane monoplane, and were using it with deadly effect against RFC B.E.'s, which continued to do the work of the Army. By this time the RFC was so used to doing what it wanted in the air without serious opposition that not enough attention was paid to this menace and in the hands of a pilot like Immelman, was a serious and disastrous factor for the RFC.

The RFC never stopped in spite of this. The work of the armies was done, Fokker scourge or no Fokker scourge. It may be asked why the RFC had not got the equivalent of Fokkers for: offensive purposes by this time, and in great quantity by this time.

Baring's notes on this question reveal:

1. Using Morane types in defence against Fokkers would have been useless.
2. When England went to war she had only a partially ready Flying Corps
3. a great deal of the most important components of the RFC aircraft were made in Belgium or in Germany.
4. Until the outbreak of the war England obtained all her magnetos from Germany. England then not only "had to make magnetos" when the war broke out, but she also had to "learn how to make them".
5. In aviation during the war everything was a compromise between progress and supply
6. it took nine months for anything new in the shape of a machine or an engine to be available in any quantity
7. it generally happened that by the time a machine or an engine or the spare parts of both were available in sufficient
8. quantities that they were out of date.

In spite of these issues, neither then nor at any time later, did the work which the armies asked the Flying Corps to do for them relax whenever flying was possible.

Baring also notes that it was often heard that:

## Notes on "Civil Aviation"

had the authorities in England been more prompt and judicious and enterprising in their choice of the machines they ordered we should, at the outset of the war, have had an overwhelming mechanical preponderance over the Germans in the air.

that the RFC might have had the Vickers fighter in 1914 instead of in the summer of 1915, in which case our pilots could have shot down the Germans like sparrows.

Baring's notes his connections enabled him to confirm the RFC might have had the Vickers machine in 1914, and also that the Gnome monosoupape engine, which was the engine of the Vickers fighter, was not in 1914 a reliable engine. It was only by the spring of 1915 that the Gnome monosoupape engine could be used safely.

The French were in the same predicament as England.

In London people were beginning to become alarmed at our air casualties. Up till this moment there had been very few casualties in the air, less than in peace time.

On the 30th of October, 1915, a startling incident happened, of which the General, Colonel Ashmore, and myself were witnesses. The King was in France, and machines were forbidden to fly in the area over his billet. I was driving with the General to Aire, and we passed quite close to the King's billet, when suddenly we saw a Henry-Farman machine flying low without marks, right over the King's billet.

We had no Henry-Farman machines at that moment. Telegrams and messages were sent all over France to trace the machine without avail. The French knew nothing of it, neither did the Belgians. The explanation was that it was the French liaison officer who used to fly back and forth from France to England.

The problem of how to fire through the propeller was engaging everyone's attention at this time.

The question was solved for the moment by having a deflector on the propeller, off which the bullet ricocheted, when it would, without a deflector, have hit the propeller.

This system was invented by French pilot Garros and copied by the Germans. They then adopted a gun which fired through the propeller, by virtue of an interrupter gear, a system which was definitely proposed by the Royal Aircraft Factory before the war, although it did not then get as far as the drawing stage.

Our synchronising gear first came into existence in 1916. On November 15th, 1915, the first Morane biplane arrived at St. Omer, and was flown against a Bristol scout.

The General watched the two machines go up.

It was rather cloudy, and after they had been up about half an hour he began to grow uneasy.

Like all people who have an intimate experience of aircraft, he hated watching flying, and hated still more waiting for people to return. However, both the machines returned safely.

On the 8th I went with the General to London. We returned on the 15th. Nothing particular happened during the next few days, except that the first Wing was made to disgorge a clerk from their surplus, and arrangements for Christmas were made.

On the 22nd of November, 1915, I went with the General to watch experiments of bombing from the air in the Third Army, which General Allenby was commanding. We watched bombs being dropped from a machine, which went off satisfactorily and at a reasonable distance from the target. When we got back the following letter was written to the third Wing, which I quote as an example of the kind of work which used **to be done**.

H.Q., 3rd Wing. With reference to the questions raised by various officers in your Wing during my visit to-day, herewith the following remarks:

No. 3 Squadron :

V-type landing gear : 2x End sockets for strut tube, rear 5408-ii wanted. (Ordered. Further information later)

## Notes on "Civil Aviation"

Machine 4793 sent from St. O. with bomb release handle outside. (Being inquired into.)

No. 13 Squadron :

Flexible petrol tubing for extra tank. (Telegraphed for.)

No spare V. under carriages on hand (Being hastened from England.)

No 11 Squadron.

10 cwt. cable (Ordered and hastened)

December 2nd Sir William Robertson came up to look at the aerodrome and the Aircraft repairing section. We were told beforehand he would be sure to ask one question which the person asked would not be able to answer. This did occur. He asked someone what a particular propeller was made of, and the man didn't know, but had to refer to someone else.

post dec 25, 1915 : I was told I had to go to Italy again with a pilot called Cooper, who was our flying liaison officer with the French, the object of the visit being to get the Caproni machine we had ordered in the summer and to make arrangements for its being flown or sent back.

I started the next day with Cooper, and we arrived at Paris in the evening and at Turin on the following day about two. We went straight to the Aviation Headquarters, and found that no arrangements had been made about the Caproni machine. It was settled we should go to Milan. January 1st, 1916. From a letter :

... "I returned from Italy last night. It was one of the most exhausting journeys I have ever done. We motored all day to Paris, then we rushed to the Gare de Lyons, and thence rushed to Turin. Then the next morning we got up at five and went by train, changing five or six times, to Vezzola, with two Italian officers, who discussed a point of higher mathematics during the journey. We got out at Adine, hired a motor, drove across the Ticino, and for all I know the Rubicon, and the Tiber, and Lake Maggiore, through Lombarda, and Novara and Arona, to Gallerata, where the Italians learn to fly. There we inspected the Caproni machine in a shed, and saw Pinsuti, the stunt Caproni pilot, and thence we drove to Malpensa, where Dante was born and Virgil died, and there we

were introduced to 45 flying officers, who each one said his name and use and clicked his heels. Then we had luncheon with the Flying School, which was commanded by Captain Falchi. At the end of luncheon the Captain made a speech about delicious England and the adorable English people, and I made a speech about divine Italians, quoting Browning, Dante, and D'Annunzio. Then an Italian pilot called Pellegrini, Cooper and myself went up into the sky. Into the grey, misty, sunless, lampless, sullen, unpeopled sky. And, as the machine climbed, the curtains of heaven were rent asunder, and through and over oceans of mist and rolling clouds, naked, majestic, white, shining

and glorious, rose the Alps, like a barrier ; and at our feet, dark as a raven's wing, loomed the waves of Lake Maggiore, fringed with foaming breakers ; and the earth was outspread beneath us like a brown and purple carpet. And we climbed and banked, and banked and climbed, and far beneath us a little Maurice Farman fluttered like a white dove. Then suddenly the three engines stopped buzzing, and we turned and banked and turned and banked and turned and banked and dived and turned sheer and steep till we gently rolled on to the ground. January July 1916. As the prospects of receiving the Caproni machine, should it ever be dismantled, seemed remote, it was settled that the machine should be flown over from Italy by Valentine. It was flown in the course of several months as far as Dijon, where, after many vicissitudes, it finally crashed.

On the 4th, General Henderson came over from England, and on the 5th an S.E. propeller was found in an F.E. box.

Jan 6th 1916 : The next

day we started for Paris, stopping on the way at Chantilly, where we had luncheon. We went to Villa Coublay in the afternoon to see machines fly.

The next morning we went to Darracq's factory. While we were having luncheon the General got a telegram saying I was to go to London at once and report to the Foreign Office for duty. He was a good deal upset, because we had more business to do with the French, and he was without an interpreter. He said :

"Of course if they really want you at once it would be criminal not to let you go." A wire was then sent asking if the duty I was required for was permanent or not. In the afternoon we went to Puteaux and Issy. That night we dined out. I sat next to X. The General was on the other side of the table. My neighbour asked me in French whether the General wasn't very young to be a General and what his name was. I said I would write it down presently on the menu, as, although he was supposed not to understand French, he would be certain to hear. Then we talked of other things. Later on during the dinner I wrote the General's name down on the menu. He leant across the table and said : "I hope they will be able to read my name in your handwriting."

We got back to St. Omer on the 13th of January. A telegram came from London saying the duty I was wanted for was permanent.

The next day I started after luncheon for Boulogne, and only just caught the boat after the fastest drive to Boulogne I ever had (49 minutes). I arrived in London at 7, and went straight to the War Office to report.

The directorate of military aeronautics was at that time occupying a loft right at the top of the War Office called Zeppelin Terrace. Later on I listened to conversations at conferences at Versailles and elsewhere on the subject

of aviation, when a fluent interpreter who understood English perfectly would nevertheless translate a phrase relative to aviation in such a way that it meant the exact opposite of what was being said, simply from ignorance of the subjects that were being discussed. Luckily there was always someone else present, who pointed these slips out to the General and the misunderstandings were rectified, but it showed one how fatally easy it was for a conversation of this kind to go wrong when the interpreter knew French and English but did not know aviation. The next day 24 or 25 Jan we crossed to France, met General Trenchard at Boulogne, and went by train all together to Amiens, where General Trenchard and I got out. General Henderson went on to Paris. In the train the two Generals had a long discussion about the future of the R.F.C. The idea was that General Trenchard should go home as Director of Military Aeronautics and that General Henderson should go out to France and take command there. On the 25th a new French liaison officer arrived vice Philonneau, called Lt. Duclos. The next two days we spent in going round Squadrons. At one Squadron one of the pilots showed us an elaborate gunmounting of the Christmas tree kind, distractingly ingenious but a definite hindrance and handicap to the fighting efficiency of the machine, as a surprise. When the General saw it he said : "I never saw such ridiculous nonsense." On the 28th Raymond Asquith came to dinner with us. He asked the General what the truth was about some air incident about which there had been a question in the House of Commons. The General told him that in the answer given in the House the facts of the case had been stated.

"

Oh," said Raymond,

"

it was true ! I thought as it was stated in the House of Commons it couldn't possibly be true."

The General, on his birthday (February 3), spent a happy day visiting the Squadrons in what was now the Third Brigade.

The R.F.C. had now expanded from Squadrons to Wings and from Wings to Brigades. A Brigade had two Wings : a Wing of fighting Squadrons and a Wing of Artillery Squadrons. A Wing was to be elastic, and had a smaller or a greater number of Squadrons according to circumstances. But every Corps was to have an artillery Squadron to serve it. On the 6th we had a visit from Lord Curzon, who went up in a machine, and on the 8th a party of Russian pilots visited us. We showed them round, and the General arranged for them to be given some Lewis guns. On the 9th we started for London. As we were getting near Folkestone the boat stopped. A trawler had been blown up by a mine. Lord Curzon was on board, and talked of the necessity of having an Air Ministry and an Air Minister. A man, as he said, on whose broad back the slings and arrows of outrageous criticism would fall harmlessly. As we were leaving Boulogne the General got a telegram saying the French

## Notes on "Civil Aviation"

Air Minister had resigned. The next day I went to the War Office, and that night we dined with General Henderson, who gave a farewell dinner at the Naval and Military Club to Commodore Paine, General Trenchard, Longcroft, Webb-Bowen, etc. But in spite of this, all plans seemed likely to be changed, and General Henderson would probably remain in England.

We went back to France the next day, and the plan of General Trenchard being Director of Military Aeronautics and General Henderson going out to France did not take effect.

On the 20th of February, 1916, Commandant Du Peuty, of the French aviation, came to see us, and brought with him a French officer, who was to be henceforth our liaison officer with the French aviation. La Ferriere came from the French Flying Corps. His services to us proved invaluable, as he not only understood English but the English, as well as aviation, and pilots, both English and French, and he did almost more than anyone to bring about the good feeling between the French and English sendees.

Commandant Du Peuty was originally a cavalry officer. He learnt to fly after the war began, and he soon proved himself to be one of the most daring of pilots and the soundest of flying officers and organisers.

Our debt to him was incalculable, as I shall try to show later on.

Commandant Du Peuty left La Ferriere with us. The latter spoke English like a native.

Here are some entries from my Diary and from letters during March :

March 1st. From a letter :

" A British pilot shot

down a German Albatross to-day with his cross-bow.

The German was so sure of being shot down that he brought his luggage with him, which consisted of a Schnurbartbinde and a small doll's portmanteau." The new type propeller should have its nose painted green. Three of them were not so painted in No. 10 Squadron.

March 2nd. Went to 15, 5, and 6 Squadrons.

Wypers Bluff taken and counter-attacked. There appears to be a lull at Verdun. A Morane biplane has arrived. F., in talking about General de Castelnau, said every one had attacked him throughout his career.

" Mais on n'a jamais pu trouver rien contre lui sauf que c'e"tait un homme tres remarquable."

No. 6 has no gun-mounting on the top plane of the Bristol.

March yd. The news from Verdun is less good.

The Germans have retaken Douaumont. Verdun is expected to fall. No. 21 has only three sheds.

March \th. The news is better. Distilled water is being issued for compasses and accumulators. Nine Lewis guns are to go to the French.

March \$th. Gibourees de Mars. Went to Mass. A French bomb expert came to luncheon. Zeppelins reported to be about. No. 3 Squadron said a Morane

## Notes on "Civil Aviation"

pilot was lurking in 20 or 25 flying an F.E. He is to be given to No. 3 at once.

March 6th. We have got a new machine. It did its trials and climbed 6,000 feet in two minutes.

March 7th. Conference at Aire at first Wing H.Q.

It snowed all the afternoon. Heavy fighting still going on.

March 8th, 1916. Lord Derby came to see the

General. In the afternoon we went to the Aircraft

Park at Hazebrouck. We went in by the back way

through a bicycle shed. This had a roof of green Willesden canvas, worth, the General said, its weight in gold. Scandal.

As we were driving back from Hazebrouck we passed a lot of lorries parked along the road. The General said if the war is still going on this time next year, put a note on my table in a year's time, but not before, that these reserve lorries must be cut down. "

Puis se

reprenant avec sa lucidité ordinaire," as Taine said about Napoleon, he added :

"

No, not next year, but

at the end of next November, but not before."

March 12th, 1916. The General showed the Depot and the Stores to General Butler, and after luncheon the Aerodrome.

From a letter : " The Hispano- Suiza did 90 on the pitot tube. It is hoped the Le Vasseur Nieuport propeller will arrive to-morrow.

They say the engine with the silencer is faster. This is difficult to believe, but I do believe it.

She missed badly as Bettington was flying across, so he had to shut off.

The fan in the acetone dope room is out of order, so the men were told to knock off work there. In future no R.A.F. signalling lamps are to be kept at the 2nd A.P. The doping room there was not satisfactory. They were repairing a plane there, which is against orders, as it was laid down that only doping is to be done there. In the motor transport they were making water trailers for the Wings. Unnecessary !

" March 13<sup>th</sup>, 1916. The spring has arrived. A lovely day. A machine was reported to be down near Aire. I went there with the General and then to Brouay.

The uncovered wings of the De Havilland scout are straight as far as the outside strut, and then swept back.

Reading the Octave of Claudius, by Barry Pain.

March 14<sup>th</sup>, 1916. News that Victor Barrington- Kennett is missing. The third brother in this war.

March 15<sup>th</sup>, 1916. From a letter:

"To-day the Hispano got the legs of the Martinsyde with the Lang propeller. The le Vasseur propeller absorbs the power, but not the efficiency, and with it the Hispano on the B.E. beat the Bristol on the climb, but not on speed. The pitot-tube not having been calibrated, it was not reliable. An LVG, an Aviatik, and an Albatross have all found a happy home in our lines."

March 16th, 1916. Went to Bailleul, No. 1 Squadron.

From a letter :

In the back gun-mounting of the Morane biplane in A. Flight of No. 1 the taper-peg of the gas-regulator had no packing. A sergeant is to go and put it right. Also the shock-absorber on the drum of the Lewis gun, which is round, is being changed for a flat and weak one ; if this turns out to be reasonable the change must be adopted generally.

No. 7 still paint their tail planes, which is unnecessary, and makes the machine heavier.

March 17th, 1916 (St. Patrick's Day). One bicycle from the 3rd Aircraft Park, was found in the Motor Transport sheds in a filthy condition.

## Notes on "Civil Aviation"

March 15th, 1916. Some Russian newspaper correspondents came to see the Aerodrome at St. Omer. They went up in two F.E's. Some new parts arrived from Dunkirk. Had dinner at the Correspondents' billets with the Russians. Wilton, formerly Times Correspondent in Petrograd, was there.

March 18th, 1916 (St. Omer). Game arrived. He is to be G. S.O.I. He comes from a Divisional Staff, and is furious at being sent to the R.F.C.

On March 22nd, 1916 we went to Paris via the Fourth Army. The next morning, at 9.30, we went to the Air Ministry. Then to Nieuport's works, and after luncheon back to Nieuport's again to see the Acland deflector propeller device tried on a machine. It was hours before the engine started. As soon as it started, it jammed owing to the mechanic being too nervous, and the cartridges came out intact the wrong end. The General said the device would be dangerous in the air owing to the chain (Which it proved to be) We then went to Villa Coublay, where we saw Morane and Saulnier.

March 29th 1916. The cold is indescribable. It is windy, cutting, gusty, cloudy, and raw.

March 30th was the day of the great move to St. Andre. The whole house was upside down. All the clerks were busy flinging maps into cases, hammering boxes, ripping, tearing, rending canvas and other stuffs, and hurling packing cases into a lorry. Bates, the General's shorthand-clerk, went to him with a screw-driver instead of a pencil. The General, in order to escape the turmoil and confusion of the move, wisely settled to spend the day out. But before starting, we bought two stoves and two carpets for St. Andre in the town. Then we went a tour of Squadrons, and arrived at St. Andre at six, where we found everyone buzzing like bees, and the house quite comfortable.

An immense stove had been put in the hall, with a pipe which went right through the house. The General's office was upstairs with an escalier derobe leading from it to the ground floor. You could also reach it by the main staircase.

St. Andre, April 7th, 1916.

ABOUT this time one of the periodical air agitations was going on among the politicians. The worst of these agitations was that they were too late to be of any use. It is no use making an agitation for obtaining in a few days time what it takes a year or more to make. The net result as far as we were concerned I tabulated as follows in my diary on April 8th:

Results of Air agitation :

A. Positive. Not the hastening of one bolt, turnbuckle, or split-pin.

B. Negative, i. General hindering of operations in France.

2. *Danger of spread of alarm and despondency among the younger personnel of the R.F.C. - This last factor was one which never seemed to occur to anyone in England!*

On the 8th of April there was great excitement because a Fokker was reported to have made a forced landing at Renescure. The Fokker was brought to St. Omer the next day. The General went there by air, and I met him in the car. He inspected *the Fokker*, which *turned out to be an exact facsimile of the Morane monoplane.*

One of our best Wing Commanders was killed in the air just at this time, namely, Lewis. He was taking up someone to show him the line, and was brought down by a direct hit from an archie just on the other side of the line. Lewis was one of the pioneers of wireless in the R.F.C., and one of the most gallant of pilots, besides being an excellent organiser and leader.

He was a very great loss. Only the day before he had asked the General whether he minded him going up. With the Fokker which had made the forced landing there was a German pilot. In the course of time he was brought to St. Andre and interrogated by Brooke-Popham.

The pilot said he supposed we should copy the Fokker, in which case he would be shot as soon as the war was over. In the course of a conversation I had with him after his interrogation was over, he said that of course British pilots were paid for going up, and he seemed surprised and a little bit incredulous when I told him this was not so. He said the Germans had never used a Fokker with a stationary engine during the war. This was interesting, and, no doubt, true.



## Notes on "Civil Aviation"

And yet a great *many pilots were convinced that they had flown past a Fokker with a stationary engine*, which shows how deceptive appearances are in the air.

This man was a native of Berlin, a clerk in ordinary life. He had mistaken the junction of a road and a canal, lost his way, and run short of petrol.

*From a German machine captured* shortly afterwards by the French *we copied and adopted the disintegrating link for machine guns.*

One of the great difficulties experienced with the machine guns in the air was disposing of the empty canvas ammunition belts. When the gun was firing in the air the empty portion of the belt was liable to get blown about and thus affect the unused portion of the belt, and so stop the firing.

This difficulty was ingeniously overcome by building up a belt of separate metal links, which were only held up a belt of separate metal links, which were only held together by the cartridges.

As each cartridge was withdrawn from the belt by the action of the gun, the link in front of it, having nothing to hold it to the rest of the belt, simply fell off, and whether it was caught by the wind or not, could have no effect on the working of the unused portion of the belt. *Such was the device invented by the Germans which we copied.*

This is the only device we ever copied from the Germans in aircraft throughout the war.

The Fokker machine had a parabellum gun which fired through the propeller, but already in February of this year *our synchronising gear known as the Scarf-Debowsky gear was in existence.*

April 13<sup>th</sup>, 1916. Navarre, the French pilot, has brought down four Huns in one day the record so far. He is a genius. He makes rings round everyone else, and spirals down nose-diving. But he has the defects of genius in an alarming degree. That is to say, from a disciplinary point of view he is difficult to deal with in the extreme.

April 14<sup>th</sup>, 1916 (St. Andrt). We went twice to G.H.Q. in the morning. I saw Raymond Asquith. April 16<sup>th</sup>, 1916. The Fokker machine has been flown to the Second Aircraft Depot at Candas, and Commandant Fort and other French officers of the French aviation were invited to come and look at it.

The General and I went to Candas by air in two R.E.s. ; the R.E. 7. is a nice comfortable, roomy machine. It was a lovely day and the flight was enjoyable.

Patrick flew over, and ran into the General's machine on landing. He had had the most amazing adventures in the Fokker, being chased by one of our machines in the mist, and having to land in the French lines. April 18<sup>th</sup>, 1916. The General has got an A.D.C. called Pelham who has arrived.

This means that in future I shall not have to keep the Mess Accounts.

Pelham proved one of the most valuable members of the Staff we ever had, and the most devoted, untiring and thoughtful A.D.C.

April 19<sup>th</sup> 1916. Le Prieur, a French naval officer, a genius, has arrived. He brought with him an extraordinarily ingenious gun-sight, which we are going to adopt. I translated a German brochure on how to erect the Fokker, and wrote three long letters about bomb sights in French.

Head Quarters,

Royal Flying Corps. April 19<sup>th</sup>, 1916.

Mon Cher Colonel,

Le Capitaine le Prieur a eu la bonte de venir nous trouver a notre Quartier General pour nous montrer son viseur.

Nous en sommes enchanter et nous desirons vivement en procurer 300 .

Nous sera-t-il permis d'en faire une commande pour ce nombre ?

Nous ne comptons naturellement pas les recevoir tout de suite mais le plus tot possible.

J'ai envoye au Capitaine Innes Ker des renseignements precis sur le modele qui nous est necessaire, arm qu'il puisse faire la commande aussitot que vous nous en donnerez la permission.

## Notes on "Civil Aviation"

Nous voudrions en meme temps obtenir un ou deux des nouveaux Bi-plans Bleriot avec moteur Hispano. Pouvez vous nous accorder la permission d'en commander trois ?  
et pouvez vous nous livrer encore deux nouveaux moteurs Hispano, afin que nous puissions les monter vers le milieu du mois de Mai ?

Nous avons bien les trois quevous nous avez donnees, mais on est en train de les utiliser a des essais en Angleterre que nous ne voudrions pas entraver a moins que ce ne soit absolument necessaire.

Agreez, Mon Cher Colonel, l'assurance de mes sentiments bien devoues,

LE COLONEL REGNIER,

Directeur de Aeronautique Francaise.  
Boulevard St. Germain,  
Paris.

/

Head Quarters,  
Royal Flying Corps. April 19th, 1916.  
My Dear Colonel,

Captain Prieur had the goodness to come to us has our General District to show us his viewfinder.

We are enchanters and we wish to strongly procure 300.

We he be allowed to make an order for this number?

We do not naturally expect to receive them right away, but as soon as possible.

I sent Captain Innes Ker of accurate information about the model is that we needed, arm he can make the order as soon as you give us permission.

We would at the same time get one or two new Bi-planes Bleriot with Hispano engine. Can you give us permission to order three? and we can still deliver two new Hispano engines, so we can climb to the middle of May?

We have three quevous we have data, but it is being used in trials in England that we would not interfere unless it is absolutely necessary.

Accept, My Dear Colonel, l'assurance devotees of my good feelings,

COLONEL REGNIER,

Director Aeronautique Francaise.  
Boulevard St. Germain,  
Paris.

April 25th, 1916. We had a fine exhibition of flying at Candas. Sir Douglas came to see it. Also Morane and Saulnier from Paris. Morane flew to Candas from Paris, and made a terrifically fast landing in a Morane-Parasol. A lot of hair-raising flying was done, notably by Patrick.

April 26th, 1916. Patrick brought down an Albatross on our side of the line from 14,000 feet.

April 27th, 1916. The apple tree in the yard is green, but the elms are still bare. Read The Sinews of War, also La jfeune Fille Violaine and UEchange, by Claudel. The French have driven the Germans out of the air at Verdun.

April 28th, 1916. The road at the St. Andre Aerodrome is still not yet tarred. There is too much denting in the Morane cowl. The archies must be warned that

## Notes on "Civil Aviation"

the Morane bullet is going to be flown home. It is indistinguishable from the Fokker in the air.

April 30th, 1916. In No. 12 Squadron the cowls on the R.A.F. engines break at the tip.  
May 1st, 1916. The wind-screen on the Morane bullet is not satisfactory.  
May 2nd. 1916. Expedition to the Fourth Army.  
We took luncheon with us. Experiments were meant

to come off in the afternoon with aeroplanes and flares on the ground, but the rain prevented them. La Ferriere has got the Military Cross. The unsatisfactory windscreen in the Morane bullet must be mentioned to Morane when we go to Paris.  
On the 6th we started for Paris; we went via Pont de l'Arche, which is just outside Rouen. Nothing can describe the beauty of the drive through Normandy. At Pont de l'Arche we had a large engine repair shop which was one of the most efficient, well-organised, smoothly running and hard-working establishments of the whole war. We arrived there at 11, and spent the rest of the morning going over it.

On the 7th we went to London. It was arranged when I was in London before that I should be attached to the Russian Parliamentary Mission when it should come over to London on a visit. The mission had now arrived, and was being entertained in London. Among the Russian representatives was the notorious Protopopoff, who did a good deal of mischief later, and was largely instrumental in bringing the revolution to a head. I met him several times, and on one occasion I asked him if the ban on vodka would continue in Russia after the war.

"God forbid," he said.

"We

have suffered enough from it already." One night a large banquet was given to the Russians at Lancaster House. Lord Kitchener was there. It was just before his departure on his last fatal journey. I got back to France with the General on the 14th of May.

May 16th, 1916. I dined at the Hotel de France, Montreuil with Raymond Asquith. It was a lovely evening.

The next day we made a strenuous visit to the First Aircraft Depot at St. Omer, and to a number of Squadrons. We had now two large stationary Depots where stores were kept and aeroplanes repaired. One, which fed the northern Armies, was at St. Omer; the other, which fed the Southern Armies, was at Candas, on the way to Amiens. Besides these, each Army had an Aircraft Park, which was a mobile unit and was capable of moving at two hours' notice and dealing out supplies on the way to wherever it was going. All its stores were kept in portable, moveable boxes, which could be packed and put on lorries or a train at a moment's notice.

To give a kind of idea of the work we did during a full day's inspection, I will transcribe the account of our expedition on May 17th in full. May 17th, 1916 (St. Andre). We started for St. Omer at 9 for the First Aircraft Depot. We arrived about an hour later. One Bristol is now ready, and will be sent with overhead top gun-mounting to No. 11 Squadron.

## Notes on "Civil Aviation"

This news was wired from the First A.D. Another wire was sent asking whether they can send us from home one of the Sopwith interrupters. The Nieuport seat is to be altered for an eccentric one. The wireless transmitter is to go at the back of the observer's seat if the lip can be cut away. There were many other notes made at the Depot, and still more at the Squadrons. No. 29 Squadron. The Squadron had been mixing French and English gear in the Monosoupape engine.

Not having all English gear they put in all French gear. This practice is to cease. But how and why did they get French gear? That is the question. The Squadron didn't know whether the parts were English or French. No French spares are to be used unless they have no English ones, and then the G.O.C. is to be informed. All French gear is to be returned. Sparking plugs are giving trouble.

The First A.D. was wired to for English cam-gear. French spares, which had not been indented for, had been sent. Satellite-wheels which were really English were sent out as French. Bronze obdurator rings were wanted instead of brass ones. An endurance test for the tankage of the De Hav. is to be done at once.

At No. 6 Squadron the Le Rhone engine, No. 5311, was not working well. R.A.F. wires were reported almost invariably bent when new. At No. 1 the question of putting fabric over the hinges of the planes (as in the Morane biplane) was discussed. They have only one Le Prieur sight. What has happened to the 19 others?

No. 7 Squadron were one machine short. Other points that cropped up were the throttling of the no Le Rhone; Lorry 12,508, which arrived at n a.m., without a shelter. The lack of aerial winches in 13 and 12; parachute flares that failed to go off; split pins that were not supplied when asked for; and the lamentable case of a Bristol that was sent to No. 13 Squadron and put every bullet into its propeller with the Vickers gun, it not having been fired at the Depot, and another sad case of a machine which was received from the Depot yesterday, rigged completely wrong, and in which the engine vibrated badly; but this is not nearly all.

May 15th, 1916 - The blue on the rings of the Morane have been painted too light.

May 19th, 1916. To-day's great thought: Two acetylene welders are wanted for the Motor-transport.

May 20th, 1916. The parachute flares have again failed to give satisfaction in No. 10 Squadron.

May 23rd, 1916. I have been made a Staff Officer.

May 24th, 1916. There are only four full tubes of hydrogen in the balloon store. The terminal of the electric accumulator is being painted.

June 1st, 1916. The First Aircraft Park report a shortage of potassium metabisulphite.

June 2nd, 1916. When we got to G.H.Q. we heard the news of the battle of Jutland. I had not noticed it in the official German wireless which I translate every day. When I got home I found it described at length in the Nauen Press, which used generally to be full of nonsense. Cowls are coming out painted like canaries, and the grass on the Fienvillers Aerodrome is to be cut.

On June 3rd, 1916, the General and I went to London. We stayed there till the 9th. The day after we came back experiments were carried out in dropping phosphorous bombs on a balloon. Nobody hit a balloon.

June 4th, 1916. Wrote the following poem while waiting for the General in Intelligence G.H.Q.: Zeppelin, Zeppelin, burning bright Over Dover in the night; Sometimes over Folkestone too, What is there 'twixt me and you? Zeppelin, Zeppelin, how I wish You were but a silver fish; Swimming like a submarine, Underneath the ocean green. Zeppelin, Zeppelin, your delight Is in dropping bombs at night; How I wish that you and I Were dropping bombs on Germany!

June 15th, 1916. Several 5000 round-Webb-ammunition-belts are wanted at once, 1 E.E. 2D arrived.

The Rolls-Royce radiator is too large and can't keep the engine warm enough. The Rolls-Royce expert who is here says the service tank can't feed the carburettor properly.

June 16th, 1916. I heard the following conversation to-day between a pilot who was waiting in the ante-room and a young sailor who is going to pilot a

## Notes on "Civil Aviation"

Blimp, and who looks like a cherub :

The Pilot :

" You are going up in a gas-bag ?

"

The Sailor :

"

Yes."

The Pilot :

" You will go a pop when they hit you.

I should like to be there."

June, iSth, 1916. Anniversary of the Battle of Waterloo (Sunday). Went to High Mass at Montreuil. The priest in his sermon said :

" On a dit qu'on peut etre

bon patriote sans etre catholique ; on ne peut pas etre

bon catholique sans etre patriote."

Reading La Fontaine's Fables.

"

Flore aux regards rians, aux charmantes manieres."

The rubber rings on the induction pipe cylinder head in the new R.A.F. engine are too hard.

June iqth, 1916. My new flannel shirt, which is made of good flannel, not shrinkable an sich, and which has never shrunk before after being washed several times, has to-day come back from the wash all lumpy with tiny sleeves. Will it ever recover ? A medium nose-piece is necessary for all Clerget engines.

June 20th, 1916. Colonel Barres, commanding the French aviation, and Commandant Pugo, General Barres' Staff Officer, came to luncheon. We had a conference with the General on future operations, La Ferriere and I interpreting. No. 27 are short of batmen.

"

Il ne regnera plus sur l'herbe des prairies." (La Fontaine.)

June 22nd, 1916. A lovely and really hot day. We went for a long tour. The birds sang and the poppies flared in the wine-coloured clover, and tethered cows made a sleepy noise munching. Clips are wanted for the clock-mounting on the F.E.aB. Longcroft was shot at while he was in a kite balloon by a Lewis gun, and I suppose someone must have let off the gun.

June 23rd, 1916. Visited some Squadrons with Sir Walter Lawrence, who is staying with us.

" Le long d'un clair ruisseau buvoit une colombe,  
Quand sur Peau se penchant une fourmis y tombe ;

"

(La Fontaine.)

Everything is ready for the new push

June 2\$th, 1916. We went to Fienvillers, which is going to be our advanced H.Q. There we met Pugo and La Ferriere. A simultaneous attack was made on

## Notes on "Civil Aviation"

all the German kite balloons by the French and English.

This was the General's idea, and it was settled when

Pugo and Barres came the other day. The General bet

Pugo a franc we would bring down more than the French. We heard news of the bag at 4.30. ; 15 Kite

balloons were attacked and six were brought down.

June 26th, 1916 (St. Andre.) News of three more

kite balloons brought down yesterday. The Third

Army have received a telephone message saying that

the wire-cutting is going on satisfactorily on the

Gommecourt salient.

On the 27th of June we had moved to a little

village called Fienvillers. This was our advanced

Headquarters. The main bulk of our

H.Q. remained behind at St. Andre. Fienvillers is a

small village not far from Candas on the road to Amiens.

Our Headquarters were in a little square house which

stood at the meeting of five cross roads, with three rooms

and a kitchen downstairs and six bedrooms upstairs,

four of which were turned into offices. The advance

Staff consisted of Game, Gordon, Corballis, myself,

Pelham, and the wireless officer, Major Smith. I was

billeted in the village in a Notaire's house just opposite

our Headquarters. Beyond the village was the Second

Aircraft Depot and Aeroplane Repair Section, which

had now assumed gigantic proportions. There was

also another Aerodrome, on which two Squadrons

were stationed, Nos. 27 and 21. These formed the H.Q. Wing, commanded at this time by Major Dowding.

G.H.Q. was in a village called Beauquesne, about half

an hour's drive in a car. Sir Douglas Haig lived in a

chateau just outside that village.

On the evening of the 20th the R.E's. started on a

long bombing raid. And the next morning at dawn the raid was repeated. I heard the machines starting at

four in the morning, and went up to look at them. The

assault took place early that morning, and all the morning

telegrams came pouring in. The General sent me

to Vert Galant to see No. 60 Squadron ; to wait there

and bring back their news in the evening. No. 60 was

commanded by Ferdy Walrond, one of the pilots who came out in 1914, and were flying Morane bullets.

The Morane bullet was a beautiful machine to fly, a

monoplane, and very fast. It was the machine of which

the German Fokker was an exact copy. And the General

had ordered a Squadron of these machines against his

better judgment because the pilots had implored him

to. He proved right and they proved wrong, because

although the machine was a beautifully fast flying instrument,

it suffered from the defect of all monoplanes: you could not see out of it except by banking, and a

pilot cannot be banking the whole time. This machine

proved to be the most expensive in pilots and cost us

more in casualties than any other during the whole

war. And the Squadron which had these machines was

the only Squadron which had to be taken out of the

line for a prolonged period.

I spent all that first afternoon at Vert Galant. I had

luncheon with one of the Flights, and after luncheon,

## Notes on "Civil Aviation"

with Walrond and Smith-Barry, I saw the pilots start and then one waited and waited. . . . Who would come back ? Who would not come back ? At 4.30 Ferdy Walrond came back with his machine riddled with bullets. I went home at 4.30 and reported to the General, and then went back again at six, and stayed till 6.30. This time I saw a lot of pilots hot from the fighting and in a high state of exhilaration as they had had a grand day. Here are some of the stories transcribed as they told them me in their own words :

July 1st, 1916 :

Scott, in No. 5, said :

"

I saw a train about four miles from Cambrai on the Cambrai-Douai line, going towards Douai. I opened from 7,000 feet at it. When it saw me coming it pulled up and started going backwards to Cambrai ; when I was at 1,000 feet I released my bombs. The train pulled up. Suddenly one of my bombs fell 30 yards in front of rearcoach, destroying the line, and preventing the train going back to Cambrai. Another bomb fell on the embankment. When about 300 feet from the train I came under heavy machine-gun fire. Flying wires, longeron, petrol-tank were shot, and several holes in the machine."

July 1st, 1916 : Gordon-Kidd, in No. 7, dived on a train. He saw it at 3,000 feet, side-slipped so as to save time, to 2,800 feet, and then came down to 700 feet and dropped his two bombs. One hit the cutting ; the second one got the train plumb, and, as it was full of ammunition, it went off with a pop. All the other machines saw the train ablaze. Another bomb was dropped on the tail of the train.

July 1st, 1916 Smith saw 9 L.V.Gs. going in formation to Bapaume.

A lot of trains were seen between Cambrai and Bapaume.

It was a great strain waiting for Smith-Barry to come back ; but he turned up all right, late.

The excitement about the fighting in the air during these first days of the battle was intense. St. Quentin Station had been bombed by four machines, all of which failed to return. The pilots, however, came down safely. But the damage they did was beyond all hopes, as they happened to hit an ammunition train in the station and a Brigade was entraining at the moment. All these men were scattered to the four winds. An indescribable panic ensued. It took the Germans hours to collect the scattered remnants, and then they could no longer be sent to the front. We knew nothing of this at the time, but heard it much later, first from German prisoners, then from refugees, and lastly, from the pilots themselves who did the deed, and who were prisoners.

Gordon-Kidd, on the 3rd, dived on a train which was

leaving the station half a mile S.W. of Abancourt, and proceeding to Cambrai from Douai. Both bombs were released together at 700 feet, and both exploded. They fell short of the track. The second bomb was released by accident simultaneously with the first. It would undoubtedly have hit the train. Recrossed the line under heavy machine-gun and anti-aircraft fire.

All the fighting during these days and throughout the whole battle of the Somme took place far beyond the German lines, and a German machine scarcely could put its nose this side of the line. Here is an extract from the Diary of a German infantry soldier written about this date (or probably a little later) :

"

Everyday one can scarcely show oneself in the trenches owing to the English airmen. It is a wonder that they don't come and pull one out of the trenches so low do they fly. Not one of our German air heroes is to be seen. And yet we are told of the brilliant proportion 81 : 29. The fact of the Englishman being a thousand times bolder was not mentioned."

The man was being, without knowing it, extremely unfair to his Flying Corps, because if his German air heroes were doing their duty, they ought not to be seen by their infantry ; they ought to be seen by us. And although not now, but not much later, this was the kind of thing our infantry in all sincerity would say about our Flying Corps, sometimes at the very time when their work was being most arduous and most successful. On the 3rd of July I went to Vert Galant again, and again I saw Ferdy Walrond go up. But this time he did not come back.

Smith-Barry took over his Squadron. Every morning I used to go into Beauquesne with the General. During the first days of the battle we had an extra office in that village, which consisted of a room with a telephone and nothing else : not even a Bradshaw to read. But later on I used to wait at G.H.Q. in the Operations office, which was supplied with a plentiful library of detective stories and novels. The entries in my Diary of this period are scanty in the extreme. Here are a few :

July nth, 1916. The Germans in the trenches put up a notice the other day saying : "Tell your Fucking Flying Corps to leave us alone. We are Saxons." As it happened, they were Bavarians.

July i<sup>th</sup>, 1916. Yesterday I had the first whole holiday I have had since last August. How did I employ it ? I employed it thus : In the morning I went to No. 27 Squadron and spent the time in gossip. I must mention that the weather made all serious flying impossible. Then I went home. But on the way I met on the road Smith-Barry, who commands No. 60 Squadron. we had luncheon with Jimmy Tower. What did we have for luncheon? We had tongue for luncheon, and potatoes, and salad,



and a salad made of fruit. Then Smith-Barry said :  
" As it's a dud day and flying is out of the question,  
let us go and visit a French Squadron." we had luncheon  
with Jimmy Tower. What did we have for luncheon?  
We had tongue for luncheon, and potatoes, and salad,  
and a salad made of fruit. Then Smith-Barry said :  
" As it's a dud day and flying is out of the question,  
let us go and visit a French Squadron." Then Smith-Barry  
put on his field-boots and his flying jacket. Then he  
ordered the Morane biplane. Then it began to rain.  
Then we walked to the Aerodrome. As it was raining  
the machine was put back in her shed. And we waited  
and looked at the map, and Jimmy Tower showed us  
on the map where the nearest French Aerodrome was.  
Then the rain stopped, but it was still cloudy, grey  
and gloomy. Then I put on a leather coat and flying  
cap and climbed into the Morane biplane. Then the  
engine was started, and at once began missing because  
there was too much oil somewhere. Then Smith-Barry  
turned round and said to me: "  
I am afraid we must riddled, and presently the engine began to buzz and off we went. We had not flown very far, and  
were scarcely off the ground, before the machine tilted  
sharply left wing down. But of that more later. Then  
we zoomed up with a terrific yank and jerk. After a  
few bumps we got into a more or less calm area, and  
we flew right on till we got immersed in a great white,  
wreathy woollen cloud, and we dived out of it. Presently  
we saw the river (the Somme). Not long after we saw  
sheds beautifully camouflages, but beautifully visible  
also, and we dived down and landed (fairly well). A  
lot of Frenchmen swarmed round us. We got out. It  
began to rain again, and the machine was put in a shed. During tea, Smith-Barry  
told us that at the start, in getting off the ground, we  
had as nearly as possible crashed, because his left wing  
was an inch off the ground. He had never flown a Moranebiplane  
before, and he was not used, he said, to its  
lateral control, or rather, to its want of lateral control  
(he said it had none, otherwise it was a charming  
machine) ; nor to the effect of a passenger being in it.  
As soon as it stopped raining we flew home. And for a  
little time we that is Smith-Barry lost the way (no  
maps), and we suddenly found ourselves over the trenches. We made a demi-tour and soon returned safe  
to our landing-ground, on which we steeply swooped.  
The people who met us Sommers ^ Portal, etc. said  
that our start had been the most terrifying thing they  
had ever witnessed. The weight of one pencil on the  
plane and we should have crashed, which shows how  
lucky it is not to know and not to understand too  
much ; as I had noticed nothing, or rather, / had  
noticed but thought that was the star way to fly. What  
would have happened if that machine had crashed, or  
if anything had happened to Smith-Barry, who is a  
star pilot ?

July iSth, 1916. Du Peuty came to see us. The  
R.E. 8. is at the A.D. It's camera needs a larger case.

## Notes on "Civil Aviation"

The machine is to be kept a fortnight so that the gun mounting and camera can be altered to what we want.

July 21st, 1916. The General sent the following telegram to No. 24 Squadron :

" Well done, 24

Squadron, in fight last night. Keep it going ; we have the Hun cold." Cooper, in 21 Squadron, was killed by a direct hit from an archie.

July 22<sup>nd</sup> 1916. Lord Northcliffe came to luncheon.

July 23<sup>rd</sup> 1916. I went with the General and Toe Smith to Fricourt, where the fighting has been, to see the ground wireless stations and mechanics.

July 24<sup>th</sup> 1916. From a letter : "I have been all day on the battlefield through the German trenches, which we took the other day. It is like a moonscape sprinkled with poppies and dead Germans' great coats, and here and there a gas mask. Shells were bursting in the distance, and our guns were firing, and there was a scream of whistling metal in the air everywhere. Troops swarming, aeroplanes flying about ; the sky quite grey, so that one wondered if one were awake or not. I think on the whole not. The village of Fricourt is entirely destroyed, and that of Mametz is annihilated, and there is nothing left of it but crumbling stones.

July 25<sup>th</sup>, 1916. From a letter :

" The sight of

the battlefield is amazing. It is one of destruction on a larger and more systematic scale than has ever occurred before. It is difficult to see in the villages where the houses were. The ground looks as though it had had streams of lava pouring over it for days out of a red-hot volcano. It is pitted with countless craters ; some of them are bright yellow, with picric acid. And the noise goes on without stopping. In the further distance you see a column of shell smoke stationary in the air like a permanent geyser, only black. Was ever a battle like this fought in the world before ? The answer is in the negative."

July 26<sup>th</sup>, 1916. Sopwith No. 5721 is to be struck off strength and made into spares. The Second Brigade are not using the pannel for signalling with the gunners.

July 30<sup>th</sup>, 1916. As we were coming back from the Chief's house, the steering-gear of the car broke and we alighted in the ditch. Later in the morning the General made a speech to the Air Mechanics in the Depot, who have been working like slaves ever since the battle began. They were all paraded in front of the shed, hundreds of them, and they marched and wheeled and formed different things so well that the General, when he began his speech, told them he thought they were the Guards. That pleased them. Then he told them how well he knew how "

## Notes on "Civil Aviation"

fed up  
"

they must be with the work they were doing at such high pressure, how disheartening it must be sometimes owing to the way aviation had of letting you down. But they were keeping the Squadrons up to strength and beating the Germans. They enjoyed the speech immensely, and I nearly cried.

August 1st, 1916. The General sent me to the 2 A.D. to find out answers to the following conundrums. I saw Meade, who is in charge of Aircraft Repair Section :

How did the test of the  
1 60 do yesterday ? All right. How many hours has it done now ? It had to come down yesterday because of the air pump ball-race. It did about 21 hours yesterday. Probably 1 8 altogether and 2 this morning.

Strengthening the carri- Machine ran into a hangar, age of the no Morane- Will send in report. Scout. Just above the wheels - Machine ran into a hangar Will send in report. Gun ought to have swan- necked feed so as not to flap about. - Noted.

How is the Sopwith getting on ? Still a lot of work to be done.

When will there be any Nieuport Scouts ready for use, and how many? - 2 can be ready for issue, i certainly. 2 by mid-day to-morrow.

re: Morane-Parasol. Have they taken off the Alcan device? Yes. This will also need a swan-neck feed. Noted.

August 6th, 1916. No. 70 Squadron arrived at Fienvillers. They have Sopwith two-seaters, commonly called "one and a half strutters."  
August 7th, 1916. The Martinsydes want cellon for their lower planes.

August 10th, 1916. Visited the Fourth Aircraft

## Notes on "Civil Aviation"

Park with the General, and found some scandals, notably that the bootmakers were mending and making boots. This, although it sounds reasonable, is really a waste of labour, as the boots can and should be sent in to the place where boots are mended by the score, and the bootmakers can do something more useful in an aircraft park.

August 15th y 1916. A happy day at the Depot and Repair Section. The Parasol gun-mounting : had they got it higher, had it been flown ? The answer was the rear gun-mounting was completed late yesterday. The no Le Rhone was flown by Busby, and was found to be very fast : to run along after landing and to want space. Another big attack has come off. It is going well. August 20th, 1916. A new R.E. 7. arrived : a huge machine with a 200 Rolls-Royce engine carrying a crew of three.

August 23rd, 1916. We went to the Depot at St. Omer. There was found to be no swivel gun-mounting on the F.E. and none in reserve.

August 24th, 1916. Colonel Barres came to luncheon and Commandant Pugo. Pugo gave the General a beautiful silver franc for losing his bet about the kite balloons. They have renewed the bet for next time.

August 26th, 1916. Had my eye-glass mended by a skilled mechanic.

August 30th, 1916. Received news that Mr. Cornish, the Vice-Provost of Eton, had died. This will sadden those in the Army who were his old pupils. I was not his pupil, but I owe him more than any pupil ever owed to any master. He pulled some of the weeds, or did his best to, out of my mind and taught me the things which were worth knowing and liking.

During the first days of September we had several visitors, among others, Lord Derby, Mr. Asquith, and Mr. H. G. Wells. I took Mr. Wells to see the Aircraft Repair Section, but I had too little time to show him all that was really of interest.

On the 8th we had a Conference of Brigadiers, at which questions dealing with future operations were discussed.

On the 12th a Kite Balloon Conference took place, attended by all the Kite Balloon Commanders. I made detailed notes of what happened at this Conference. They are worth quoting as an instance of the kind of things that have to be dealt with in modern war, the

## Notes on "Civil Aviation"

kind of way work is done and the extraordinary number of small details that have to be attended to.

September 12th, 1916. The Kite Balloon Conference, at the Third Brigade, was attended by the Kite Balloon Commanders : Cleaver, Boyle, Byng, MacNeece, and Wyse. Following is a brief summary of the Conference :

### OBJECT OF THE CONFERENCE.

To get into closer touch with the Kite Balloon Squadron Commanders .

To point out that as the War continues, and the scale of work increases, individualism, which has been a good thing and unavoidable in the past, will have to give way to uniformity. This does not mean that progress will cease, but that progress will work towards one uniform standard.

### POINTS DISCUSSED.

#### Rigging.

Boyle thought guides ought to be made of cotton rope instead of hemp rope, because cotton ropes are easier to handle. He preferred the Caco Balloon to the old one. It can go up in a stronger wind, and is steadier.

Byng also preferred the Caco Balloon. He said it is steadier, and can work in a rougher wind, even in a 16-mile gusty wind. He considered the guides were not long enough and would like them thicker, not merely for the sake of comfort, but for safety. (Boyle here gave us to understand that this is what he had meant to say.) He did not care if they were changed to cotton. He said the Caco Balloon had done 4,800 feet with two passengers and ballast. Cleaver had had no experience as yet of the Caco Balloon, (which should be spelt Caquot.) But he thought it was better, more stable and had a better lift. He was in favour of adopting the Caquot. He had nothing to say about the rigging.

With regard to the handling ropes, he thought they could be shortened and a long cotton rope added to them. The G.O.C. suggested the pushed Bell handle rope. Squadron Commanders deprecated this as being likely to suffer from wet. Cleaver did not like the curve on the basket. He thought the lead on the metallic V might be shortened.

MacNeece thought the handling ropes should be softer and thicker. He agreed about the basket with Cleaver. He liked the Caquot.

Wyse thought the basket suspension too short. This could be remedied by putting slots (?) ; he also approved of cotton ropes for handling guides. He wanted ropes to be in one piece.

Byng wants a hole cut in the back of the Balloon to let the air out quicker when on the ground.

Boyle raised the question of valve lines.

Cleaver used aeroplane cable on his suspension car, and preferred it as he said it doesn't chafe. This question does not arise in the Caquot balloon.

Byng wants a spare bar or hoop as the case may be.

#### Winches.

Cleaver was in favour of the Delahay winch. He didn't

## Notes on "Civil Aviation"

know its power, nor its power compared with the Scammell

He thought the Scammell was not sufficiently powerful to pull down the balloon he has got now. Being asked by the G.O.C. whether he ever pulled down his balloon at top speed he said :

"

No, never except on a fine day."

MacNeece did not know the power of the winches either.

He had hauled down at top speed.

Wyse had never had a Delahay winch. He knew nothing of their power.

Byng didn't think the Scammell powerful enough. He thought the Caquot needed a more powerful winch. Asked why, he said because it works in a stronger wind and at a greater height Byng and Boyle agreed in thinking one should be able to pull down the balloon at top speed or 8,000 feet a minute in a 30 -mile wind.

Cleaver thinks the Scammell winch too heavy and not mobile enough. He would like a Caterpillar. He didn't care how slow he moved. The Scammell, he said, needed a metal road. MacNeece thought a Caterpillar would not stand a long advance. He advocated chains. He said the Scammell was more mobile in a wind.

Wyse said if winches are too light they are towed by the balloon. He said the Scammell loses ground going round corners. He was strongly against a Caterpillar.

Byng would like a petrol electric winch for changing gear while hauling down. He thought the most mobile winch would be the horse-drawn one. He was against a Caterpillar.

Boyle was in favour of chains and against a Caterpillar:

Telephones.

Should they be in the hands of Squadrons or of Signals ?

Cleaver voted for signals.

Wyse for Signals.

Boyle for Squadrons.

Byng, who had had experience of both, was indifferent.

Parachutes.

Byng did not like the cap, which he said comes off too quickly.

Wyse said the rubber band perishes.

MacNeece thought the parachute ideal, if the packing was all right.

Cleaver thought the rubber rings were not good.

No definite allowance of spare rubber bands is laid down. This was noted by Currin and Brooke-Popham.

The majority thought the parachute should not be fastened to the Balloon and to the observer, but ready for the observer to fasten completely at the last moment.

## Notes on "Civil Aviation"

Boyle thought all fastening should be done, and that the only reason the observers were against this was because they were afraid of the parachute coming out, and being blown out themselves. He thought the rubber rings were not to be relied upon in all circumstances. Boyle raised the question of the supply of gas. He said he had to send 40 miles each way for it. He suggested an advanced Depot at Fricourt.

Byng raised the question of red arrows being no longer painted on the tubes. This gives a lot of extra labour.

Boyle says his establishment is too small for the amount of paper work he has to do. He has no clerks, only one corporal. He wants typewriters.

On the 14th September, 1916, the General made a speech to the mechanics in the morning, and after luncheon he spoke to all the officers of the Squadrons belonging to the Ninth Wing, who were assembled in a shed. He told them about what was going to happen next day, that a big offensive was going to be made, that tanks were going to be used for the first time, and a great effort was going to be made to strike a decisive blow. The effect of this speech is well described in "An Airman's Outings," by a pilot who was present, and who writes under the name of

"

Contact."

During the night machines were sent out with orders to drop bombs on the enemy's billets, railway junctions, aerodromes, and any other targets. This was done from every aerodrome in the Somme area. In the morning, before dawn, Ian Henderson left from No. 19 Squadron for special Contact patrol work to follow and report on the movements of the infantry. He landed two hours later, his machine riddled with bullets, and came straight to our Headquarters. His face was glowing with excitement, and black with oil. He had seen our troops leave the trenches and go ahead. Only a few, he said, were held up. Selous, the son of the famous big-game hunter, took Ian Henderson's place. In the afternoon Selous came back with news of the tanks, and Ian Henderson was sent out again. He was a long time coming back from this second expedition, and we began to grow uneasy, but he landed all right with several wires and struts shot, and even his engine hit. He had seen one of the tanks capture a village at the head of a column of men walking beside it, cheering and waving to him as he flew over.

September 16th, 1916. Minding, a pilot in 34, had his main spar shot by a shell. Two-thirds of the main spar were shot out and the whole length cut. He signalled:  
"Have been stung by a wasp."

## Notes on "Civil Aviation"

On September 14th, No. 34 never had less than six machines in the air : most of them did seven hours. Holt got bored with his registering, so went down to 1,300 feet and machine-gunned the battery. Artillery co-operation had never been so great in volume, nor so effective.

On the 15th we suffered one very sharp loss in the shape of Cruikshank, one of the most gallant pilots who ever flew. He was not only as brave as a lion but absolutely untiring. He had been fighting ever since the beginning of the war. And I think there was no one in the Flying Corps ever did so much work at a stretch. He had a sublime and, alas ! as it proved, a mistaken belief that nothing could touch him or hurt him.

On the 17th, while I was showing a party of Russians round the Aerodrome, someone casually told me that Raymond Asquith had been killed. What a waste people said, when they thought of his brilliant brain, his radiant wit, his mastery of language, his solid scholarship, and all his rare gifts. But it wasn't a waste, and never for one moment did I think so. Raymond's service at the front was the crown and purpose of his life. A purpose fulfilled to a noble close. He loved being in the Army as much as he had hated being at the Bar. He went on with his life in the Army where he had left it off at Oxford, and he died in a second miraculous spring ; and by being in the Army and being what he was, and doing what he did, in the way he did it, he made it a little easier for us to win the war.

On the 23rd of September, 1916 : The fighting in the air which formed part of the big attack on September 15th made the General more and more anxious about the future. It would be strange if such a situation could last. So a memorandum was written which embodied the General's views. This memorandum was afterwards printed and circulated, and parts of it embodied later in a pamphlet called Offence and Defence. As it contains the main principles of our policy in the air, I quote it here. It contains nothing technical :

Since the beginning of the recent operations the fighting in the air has taken place over the enemy's line, and visits of hostile aeroplanes over our lines have been rare. It is to be hoped that this state of things may continue, but as one can never be certain of anything in war, it is perhaps an opportune moment to consider what policy should be adopted were this state of affairs to change, and were the enemy to become more enterprising and more aggressive. It is sometimes argued that our aeroplanes should be able to prevent hostile aeroplanes from crossing the line, and this idea leads to a demand for defensive measures and a defensive policy. Now is the time to consider whether such a policy would be possible, desirable and successful.



## Notes on "Civil Aviation"

It is the deliberate opinion of all those most competent to judge that this is not the case, and that an aeroplane is an offensive and not a defensive weapon. Owing to the unlimited Space in the air, the difficulty one machine has in seeing another, the accidents of wind and cloud, it is impossible for aeroplanes, however skilful and vigilant their pilots, however powerful their engines, however mobile their machines, and however numerous their formations, to prevent hostile aircraft from crossing the line if they have the initiative and determination to do so.

The aeroplane is not a defence against the aeroplane.

But the opinion of those most competent to judge is that the aeroplane, as a weapon of attack, cannot be too highly estimated .

A signal instance of this fact is offered to us by the operations which took place in the air at Verdun.

When the operations at Verdun began, the French had few machines on the spot. A rapid concentration was made, and a vigorous offensive was adopted. The result was that superiority in the air was obtained immediately, and the machines detailed for artillery co-operation and photography were enabled to carry out their work unmolested, but as new units were put into the line which had less experience of working with aeroplanes, a demand arose in some quarters for machines of protection, and these demands were for a time complied with. The result was that the enemy took the offensive, and the French machines were unable to prevent the hostile raids which the enemy, no longer being attacked, was now able to make. The mistake was at once realised and promptly rectified. A policy of general offensive was once more resumed, and the enemy at once ceased to make hostile raids, all his time being taken up in fighting the machines which were attacking him. Superiority in the air was thus once more regained .

On the British front, during the operations which began with the battle of the Somme, we know that, although the enemy has concentrated the greater part of his available forces in the air on this front, the work actually accomplished by their aeroplanes stands, compared with the work done by us, in the proportion of about 4 to 100. From the accounts of prisoners, we gather that the enemy's aeroplanes have received orders not to cross the lines over the French or British front unless the day is cloudy and a surprise attack can be made, presumably in order to avoid unnecessary casualties. On the other hand, British aviation has been guided by a policy of relentless and incessant offensive. Our machines have continually attacked the enemy on his side of the line, bombed his aerodromes, besides carrying out attacks on places of importance far behind the lines. It would seem probable that this has had the effect so far on the enemy of compelling him to keep back or to detail portions of his forces in the air for defensive purposes. When Lille station was attacked from the air for the first time no hostile aeroplanes were encountered. The second time, this place was attacked our machines encountered a squadron of Fokkers, which were there for defensive purposes. This is only one instance among many.

The question which arises is this : Supposing the enemy, under the influence of some drastic reformer or some energetic leader, were now to change his policy and follow the example of the English and the French, and were to

cease using his aeroplanes as a weapon of defence and to start a vigorous offensive and attack as many places as far behind our lines as he could, what would be the sound policy to follow in such a case ? Should we abandon our offensive, bring back our Squadrons behind the line to defend places like Boulogne, St. Omer, Amiens and Abbeville, and protect our artillery and photographic machines with defensive escorts, or should we continue our offensive more vigorously than before ? Up to now the work done by the Germans compared with that done by our aeroplanes stands, as we have seen, in the proportion of 4 to 100, but let us suppose that the enemy initiated a partial offensive in the air, and that his work increased, compared with ours, to a proportion of 30 or 50 to 100, it is then quite certain that a demand for protective measures would arise for protective Squadrons and machines for defensive patrols. One of the causes of such demands is the moral effect produced by a hostile aeroplane, which is out of all proportion to the damage which it can inflict.

The mere presence of a hostile machine in the air inspires those on the ground with exaggerated forebodings with regard to what the machine is capable of doing. For instance, at one time on one part of the front whenever a hostile machine, or what was thought to be a hostile machine, was reported, whistles were blown and men hid in the trenches.

In such cases the machines were at far too great a height to observe the presence of men on the ground at all, and even if the presence of men was observed it would not lead to a catastrophe. Again, a machine which was reported in one place would certainly, since it was flying rapidly, be shortly afterwards observed in another part of the lines and reported again, but the result of these reports was often that for every time the machine was sighted a separate machine was reported, leading at the end of the day to a magnified and exaggerated total. The sound policy, then, which should guide all warfare in the air would seem to be this : to exploit this moral effect of the aeroplane on the enemy, but not to let him exploit it on ourselves. Now this can only be done by attacking and by continuing to attack.

It has been our experience in the past that at a time when the Germans were doing only half the work done by our machines that their mere presence over our lines produced an insistent and continuous demand for protective and defensive measures.

If the Germans were once more to increase the degree of their activity even up to what constitutes half the degree of our activity, it is certain that such demands would be made again.

On the other hand, it is equally certain that, were such measures to be adopted, they would prove ineffectual. As long as a battle is being fought, any machine at the front has five times the value that the same machine would have far behind the lines. If the enemy were aware of the presence of a defensive force in one particular spot he would leave that spot alone and attack another, and we should not have enough machines to protect all the places which could possibly be attacked behind our lines, and at the same time continue the indispensable

work on the front.

But supposing we had enough machines both for offensive and for defensive purposes. Supposing we had an unlimited number of machines for defensive purposes, it would still be impossible to prevent hostile machines from crossing the line if they were determined to do so, simply because the sky is too large to defend. We know from experience how difficult it is to prevent a hostile vessel, and still more a hostile submarine, from breaking a blockade, when the blockade extends over a large area. But in the air the difficulty of defence is still greater, because the area of possible escape is practically unlimited, and because the aeroplane is fighting in three dimensions. The sound policy would seem to be that if the enemy changes his tactics and pursues a more vigorous offensive, to increase our offensive, to go further afield, and to force the enemy to do what he would gladly have us do now. If, on the other hand, we were to adopt a purely defensive policy, or a partially offensive policy, we should be doing what the French have learnt by experience to be a failure, and what the rank and file of the enemy, by their own accounts, point to as being one of the main causes of their recent reverses.

Moreover, in adopting such a policy it appears probable that the Germans are guided by necessity rather than by choice, owing to the many fronts on which they now have to fight, and owing also to the quality and the quantity of machines they have to face on the Western Front alone. Nevertheless, one cannot repeat too often that in war nothing is certain, and that the Germans may, either owing to the pressure of public opinion, or the construction of new types of machines, or the rise of a new leader, change their policy at any moment for a more aggressive one.  
Hugh Trenchard September 22nd, 1916.

ON the 22nd September, 1916, on our way to G.H.Q., we were kept waiting a long time at the Candas level-crossing, by trains, and on our return journey we found a block, and a seething confusion caused by two batteries, a column of infantry, a line of R.F.C. transport, a number of lorries, light-tenders, and touring cars and motor cyclists, all going in opposite directions. They had been there three-quarters of an hour. The General got out and gave a few orders, and made some of them stop and others move, and halt and move again, and in five minutes' time the tangled skeins of traffic were disentangled and moving on once more. Further news of fighting came in the afternoon. We spent some hours at the Depot, where we were told that the hand starter epicyclic-gearing on the R.E.y, with the 250 Rolls-Royce engine, had gone wrong.

September 23<sup>rd</sup>, 1916. From my Diary : Three French officers came to the Depot in the afternoon. Talking of the different makes of the Hispano engines, they picked out one maker as being the only good one. It was the one our pilots say is the only bad one, and the engine they clamour for is the one the French said was the worst.

## Notes on "Civil Aviation"

September 28th, 1916. The shock-absorber on the tail-skid of the Morane is too fierce.

October 2nd, 1916. The Maxim gun on the Aerodrome has no washers.

October 2nd, 1916. Tour round the Kite Balloon Sections. No.1 Section :  
the gland for taking pressure in the balloon is unsatisfactory.

The rope on the Caquot is different from the rope they repair it with.

October 6th, 1916 : Bron Lucas arrived in France - was made a Flight Commander in No. 22 Squadron. He had already flown his new machine, an F.E. 2.B. He wanted three valve rockers (old type) for the 120hp Beardmore engine. We were able to provide him with these immediately, which surprised him, after being in England, where he said it was difficult to get a split pin out of anybody. Here in France, he said, you felt that everyone was out to help you. The next time I saw him was on October 11th. He had been over the line, and had been archied and a bit of his propeller had been shot off. His Squadron Commander said they could not keep him out of the air.

16 October 1916 : The front : Ridley, who had been a pilot in No. 60 Sqn, arrived back

Ridley, had landed in the German lines near Cambrai in August 1916 where he had remained concealed for some weeks. RFC HQ Officer Maurice Baring had spent the morning with him before he started on this expedition.

He had then walked to Belgium, where he was once actually arrested on a tram.

He hit the policeman in the face and jumped off the tram.

He had walked about in the guise of a man with an earache.

He couldn't speak French or German.

He had a passport with his photograph on it given him by the German authorities.

He gave me this photograph, which looks like the picture of an Englishman without a collar.

He walked five miles to the frontier wires carrying a ladder ; when he got there he climbed over into Holland. Trenchard gave him the D.S.O.

1930s : imperial airways images: All black and white photographs via Getty Images; Ad for Imperial Airways in the November 4, 1937 issue of Flight magazine; Ad for Imperial Airways in the December 2, 1937 issue of Flight magazine; Color cutaway illustration via Vintag.es; Color air travel map of London to Singapore by Michael Hession; Air schedule via Flickr; Imperial travel posters via the Smithsonian

28 APRIL 1915 : Canada Gazette : ORDER IN COUNCIL : AT THE GOVERNMENT HOUSE AT OTTAWA : HIS ROYAL HIGHNESS THE GOVERNOR GENERAL IN COUNCIL.

WHEREAS by section 291 of The Customs Act it is provided that "the Governor in Council may, from time to time, prohibit the exportation or the

## Notes on “Civil Aviation”

"carryinQ coaatwise or by i nland navigation, of arms,

"ammuntti on and gunpnwder, military and naval

"etores, and any articles which thi Governor in

"Council deems capable of being converted into or

"made useful in increaeing the quantity of militnry or

"naval storee, provisions or auZ sort ot victual which

may be used as food by man” And whereas an Order in Council, dated the 8th

August, 1914, and various orders, dated respectively, the 7th August, 1914, the 29th October, 1914, the 27th

November, 1911, and the 23rd January, 1915, have been issued in pursuance of the aforesaid powers. And whereas it is expedient that the said orders should be consolidated with amendments and additions, and that such orders should be revoked ;

And whereas the articles, other than arms, ammunition, gunpowder, military and naval stores, hereinafter enumerated are articles which the Governor in Council deems capable of being converted into or made useful in increasing the quantity of military or naval stores, provisions or any sort of victual which may be used as food by man,-

Now therefore His Royal Highness the Governor General in Council in pleased to declare that the above

mentioned orders be and thwsaine are hereby revoked . And in virtue and in excrviso of t1 iv F NINY're aturu•

said, and under and in virtue Of section tl of The lVar Moseana Act, 1914, Ilir ItoYal Highuesn the quvurnor

tivneral in Council is 1draw-4 furthur to duolaru and it

is hereby declared as follows: • (A) That the exportation of the following glMMIE b,} to hit dte al to all dtlationv other than the Itoited Kingdotn, British l' wwwtions and l'rotcrtotaloe, F' rmtco, Ruseia (excIpt Bnlitic ptrta), Ja) I nn, United States

when for consumption in United States only, not distributed to a representative of consumers in United Kingdom via

Cte~ 8tarus, or exp rrud via United States under license or dispensation from Canada, via.

(A) That the exportation of the following goods be prohibited to all destinations abroad *other than the United Kingdom, British Possessions and Protectorates:*

Aeroplanes, airships, balloons and aircraft, of all kinds and their component parts, together with accessories and articles recognizable as intended for use in connection with aeroplanes, airships, balloons and aircraft, including:

gold beater's skin, shantung silk in the piece ;

## Flax fabric suitable for aeroplanes ;

non-inflammable “celluloid” sheet (or similar transparent material non-soluble in lubricating oil, petrol or water) aeroplane dope ;

high tensile steel tubes ;

aeroplane instruments (aneroids, barographes, revolution indicators)

aeroplane turnbuckles ;

steel stampings ;

magnetos

; aeroplane engines and parts ;

amyl acetate ; aceto-cellulose ; trephenyl phosphate ;

Summer of 1915 : Co-operative aircraft construction centres similar to Scotland had been set up in Coventry, Manchester and London.

23 April 1915 : United States : ACA met for the first time in the office of the secretary of war. Add the word "National" to their designation. filling out the acronym NACA by which it was thereafter known and distinguishing itself from the British Advisory Committee for Aeronautics after which it was modeled and named. (source : Minutes of Meeting of National Advisory Committee or Aeronautics held in the War Department at Washington, D.C., April 23, 1915"; Scriven to The Advisory Committee for Aeronautics, 16 Apr. 1915.) At the Committee's direction, the secretary conducted a survey of aeronautical activity in the United States, confirming what was already suspected: there was precious little activity, and it was in a sorry state compared to the progress being made in Europe

1915 : A paper to the engineer who may be working on new aeroplanes, or to the manufacturer of accessories, was some time ago presented to the Laboratory Committee of the Aeronautical Society, in England, by J. Brimelow and W. G. Mann. Twelve tests were made with turnbuckles regularly on the market, each specimen being pulled to destruction. -Aeronautics

## Notes on "Civil Aviation"

June 1915 : The Ministry of Munitions Act laid before Parliament.

1915 : United Kingdom - War Office - Department of Military Aeronautics moves from the War Office building to 13 Albemarle Street. A.I.D headquarters moves to the new Department of Military Aeronautics offices.

Department of Military Aeronautics / A.I.D Organisation:

Col. Fulton - Deputy Director of Military Aeronautics (he died 4 days later)

Maj Beatty - (left AID to replace Col. Fulton)

Capt Bagnall-Wild - Chief Inspector (formerly inspector of engines)

Capt R. H. Verney, RFC - Inspector of Engines.

At this time the A.I.D technical strength had risen to 488. A.I.D Headquarters dealt with:

1. work which was not inspectional.
2. Technical questions raised by the RFC
3. Technical questions raised by contractors
4. difficulties met by contractors lacking experience in the care and procedures for heat treatment demanded by the new special alloy steels in the production of that material as well as parts and pieces made from it. A.I.D dispatched "release notes" for the "material leaflets" containing technical information and detailing the recommended heat treatments. (the fore-runner to the "Notices to Ground Engineers")

The A.I.D was the chief technical adviser to the "Department of Military Aeronautics" concerning:

1. modifications to aircraft which had reached the production stage.
2. modifications to engines which had reached the production stage.

Royal Aircraft Factory - Farnborough was the chief technical adviser to the Department of Military Aeronautics concerning

1. modifications to experimental aircraft.
2. modifications to experimental engines.

Technical questions relating to aeroplanes and engines designed and manufactured by the Royal Aircraft Factory were answered by Farnborough.

Decentralization of the AID's activities began in 1915, with inspection handled through district organizations.

To prevent wastage of material and unnecessary transport of sub-standard goods to main contractors' works, inspection began at the works of sub-contractors supplying materials and components.

Staff shortage was such that AID begins recruiting and training women as "viewers" (pioneering the entry of women into industrial inspection).

From 1916 to the war's end not less than half the AID's staff were women.

A.I.D requirements for interchangeability of parts and pieces was essential and worth every effort to develop the standards.

By WW1?, as a check (and proof) of its success in achieving it the A.I.D dismantled a number of completed and tested engines built in both the parent and "shadow" factories and then thoroughly mixed the parts.

Complete engines were then built from these mixed parts and tested with satisfactory results.

To achieve similar interchangeability with large and complex airframe components, carefully conceived systems of assembly jigs, jig references and acceptance gauges, using such techniques as optical alignment, were developed.

August 6, 1915 : After a non-stop day and night production for 12 months to meet war demands, the Raf closes for three days' rest.

In 1915 The London County Council agreed to place its resources at the disposal of the Ministry of munitions to manufacture munitions and train workers for munition factories.

The lines of training developed for Munitions workers included:

- a) general machine-shop practice,
- b) turning,
- c) milling,
- d) grinding,
- e) screw gauge lapping and measuring,

## Notes on "Civil Aviation"

- f) fitting,
- g) assembling,
- h) gauge making,
- i) instrument making,
- j) lead burning,
- k) copper-smiths work,
- l) woodwork machining,
- m) woodwork assembling for aeroplanes,
- n) propeller-shaping,
- o) compass painting, and
- p) tracing for drawing offices.

Sir Robert Blair, Education Officer ;

General report by J S Smail, District Manager;

Reports from -

M F Ryan, Director of Munition Gauges, Ministry of Munitions;

G W Bird, Superintendent of gauge manufacture, Borough Polytechnic;

R S Clay, Northern Polytechnic;

A G Cooke, Padding ton Technical Institute;

H A Garratt, L C C. School of Engineering and Navigation;

P J Haler, Hackney Institute;

P R Klrke, Hackney Institute;

Wilfred Lineham, Goldsmiths College;

Professor Mather, City & Guilds College;

C T Millis, Borough Polytechnic Institute;

R Mullineux Walmsley , Northampton Polytechnic;

H W Richards, L C C School of Building;

H Moss, Engineering Training Centre Brixton;

W Rankine Engineering Training Centre Shoreditch

(Source Reports on The Manufacture of Gauges & the Training of Munition Workers in Certain London Technical Institutions  
London County Council

Published by Education officers Dept. New C Oct 2 1921 (1921))

December 1915 : Home defence against enemy aircraft removed as a UK Admiralty function.

December 1915 : UK War Office assumes the function of home defence against enemy aircraft.

February 1916 : UK War Office "Home Defence Scheme" under Sir David Henderson:

pilots to be specially trained in night flying

Pilots to sleep in shifts

communication to be provided from the War Office by telephone.

Ring of ten aerodromes encircling London:

1. Chingford :
  1. two BE2C's manned by specially trained pilots,
  2. six mechanics
  3. RE party operating a searchlight
  4. Anti-aircraft guns
2. Croydon :
  1. two BE2C's manned by specially trained pilots,
  2. six mechanics
  3. RE party operating a searchlight
  4. Anti-aircraft guns
3. Farningham :

## Notes on "Civil Aviation"

1. two BE2C's manned by specially trained pilots,
  2. six mechanics
  3. RE party operating a searchlight
  4. Anti-aircraft guns
4. Hainault Farm :
1. two BE2C's manned by specially trained pilots,
  2. six mechanics
  3. RE party operating a searchlight
  4. Anti-aircraft guns
5. Hendon :
1. two BE2C's manned by specially trained pilots,
  2. six mechanics
  3. RE party operating a searchlight
6. Hounslow :
1. two BE2C's manned by specially trained pilots,
  2. six mechanics
  3. RE party operating a searchlight
  4. Anti-aircraft guns
7. Joyce Green :
1. two BE2C's manned by specially trained pilots,
  2. six mechanics
  3. RE party operating a searchlight
  4. Anti-aircraft guns
8. Northolt :
1. two BE2C's manned by specially trained pilots,
  2. six mechanics
  3. RE party operating a searchlight
  4. Anti-aircraft guns
9. Wimbledon Common :
1. two BE2C's manned by specially trained pilots,
  2. six mechanics
  3. RE party operating a searchlight
  4. Anti-aircraft guns

Spring of 1916 : British MP Noel Pemberton Billing calls for a judicial enquiry into the military and naval air service, as "certain officers (Lieutenant Desmond Lucius Studdert P. P. Arthur ) had been murdered (rather than killed) by:

- I. the carelessness, incompetence or ignorance of the senior officers of the military and naval air service; or by
- II. the carelessness, incompetence or ignorance of the technical side of the military and naval air services".

3 August 1916 : An "official investigation" by a government committee set up on XXX concludes that Lieutenant Desmond Lucius Studdert P. P. Arthur was at fault, and the crash a result of dangerous flying.

end of 1916 : Additional Government committee finding : Lieutenant Arthur's aero-plane crash due to wing damage.

January 1915 the South African pilots were appointed in the Permanent Force and recalled to the Union to help man the SAAC established on 29 January 1915 for service in German South West Africa.

By May 1915 six Henri Farman F-27 and two B.E.2C aircraft were able to take to the air in support of General Botha's forces.



## Notes on "Civil Aviation"

Within a very short space of time the SAAC pilots had proven their worth, flying regular reconnaissance patrols to keep Gen Botha constantly informed of the enemy's movements and positions.

The Farmans also carried out a number of bombing missions. After the German South West Africa campaign, the majority of the SAAC pilots volunteered for further service in England, where they were to form the nucleus of 26 (South African) Squadron (Sqdn) of the RFC. This unit was dispatched to East Africa in December 1915 to carry out reconnaissance, bombing and communication missions in support of Gen Smuts' forces. The squadron was eventually recalled to England and disbanded in 1918. Early in 1920 the British Air Ministry declared the "Cape to Cairo" air route, which provided for 24 aerodrome and 19 emergency landing strips, fit for use.

The London Times announce that it would finance the first flight to the Cape and its aircraft - a Vickers Vimy Commercial, G-EAAV- took to the air on 24 January 1920.

General J.C. Smuts however wanted South African aviators to be the first to complete the trip. He therefore authorised the purchase of a Vickers Vimy at a cost of 4 500 pounds. Christened the Silver Queen, and commanded by Lt Col H.A. (Pierre) van Ryneveld with Fit Lt Quinton Brand as co-pilot, the aircraft took off from Brooklands (England) on February 1920. After an eventful night crossing of the Mediterranean, they arrived at Derna the following morning. Further night flying following in an attempt to catch the Vickers Vimy sponsored by the London Times, but the Silver Queen was wrecked in a force landing at Korosko, Sudan.

Another Vimy F8615 was purchased from the RAF at Heliopolis into which the original engines were installed. The Silver Queen II (as the second aircraft was named) left Cairo on 22 February. Five days later the Times contender was destroyed in a crash at Tabora, but on 6 March the same fate befell the Silver Queen II at Bulawayo.

Fortunately, with some of the Imperial Gift aircraft already in Pretoria, a DH9 H5646 called Voortrekker was assembled and flown to Bulawayo. Thus Van Ryneveld and Brand were able to complete their flight to the Cape where they arrived on 20 March 1920 after a total flying time of 109 hours and 30 minutes. 1920 saw the establishment of the South African Air Force (SAAF).

Col Pierre van Ryneveld was appointed Director Air Services (DAS) with effect from 1 February 1920 with instructions to establish an air force for the Union. This date is acknowledged as marking the official birth of the SAAF.

The establishment of the SAAF was greatly facilitated by the extremely generous decision by the Imperial Government in 1919 to allocate to the Union some 100 aeroplanes from its war stocks, complete with spares and equipment.

These were joined by a further 13 aircraft from other sources making a total of 113 aircraft. Eleven DH. 9 aircraft and Experimental Air Mail Service between Cape Town and Durban in 1925. Although the SAAF rendered an efficient service, it was a commercial failure. In September 1931 the Department of Civil Aviation was transferred to the Department of Defence and the post of Director of Civil Aviation abolished. The entire aviation organisation in South Africa thus fell under the DAS.

The post of DAS was abolished on 30 April 1933 and on the following day Col Pierre van Ryneveld was promoted to Brigadier-General and appointed Chief of the General Staff. There was thus no chief of the SAAF and it remained under Van Ryneveld's direct control until 30 June 1939. ([http://www.af.mil.za/about\\_us/history.html](http://www.af.mil.za/about_us/history.html))



## Notes on "Civil Aviation"

January 1915 : UK War Office - Admiralty wants new twin engine bomber. Handley Page L.200 is re-designed and called O/100. 1915 the British Army Council suggests that the Dominions raise their own air units for service within the Royal Flying Corps.

February 1915, the CAC had disappeared and Janney, back in Canada, had launched himself on a career as a con man. No Canadian air force would appear until the closing months of the war, and even that would not see combat - See more at: <https://legionmagazine.com/en/2015/06/canadian-flyers-go-to-war/#sthash.Nujh0vay.dpuf>

1915 : Howard Vincent Reid transfers from the Royal Newfoundland Regiment to the Royal Flying Corps. At least 14 of the Royal Newfoundland Regiment became members of the RFC, - See more at: <https://legionmagazine.com/en/2006/11/the-flying-newfoundlanders/#sthash.Iq96YWOW.dpuf>

Joseph Daymond of St. John's, Newfoundland wounded July 1, 1916, discharged from Royal Newfoundland Regiment. Applies to join the RFC in Canada. Roy S. Grandy, transfers from the Royal Newfoundland Regiment to the Royal Flying Corps, leaves the Canadian Air Force in 1923 to try his hand at commercial flying before returning to the RCAF in 1925. - See more at: <https://legionmagazine.com/en/2006/11/the-flying-newfoundlanders/#sthash.Iq96YWOW.dpuf>

Redford Henry Mulock of Winnipeg, a McGill graduate in electrical engineering, arrived in October 1915 as an acting corporal in a cavalry unit. By January 1915, he had received a discharge from the CEF and joined the Royal Naval Air Service, an unusual path. By November 1918, he was a colonel—the highest rank attained by any Canadian in the wartime RAF—and in command of a force of Handley-Page V/1500 heavy bombers that were waiting for suitable weather to attack Berlin. - See more at: <https://legionmagazine.com/en/2015/06/canadian-flyers-go-to-war/#sthash.Nujh0vay.dpuf>

7 May 1915 the Canadian Aviation Corps ceases to exist.

25 August 1915 : Hugh Trenchard promoted Brigadier-General & appointed "Officer Commanding - RFC, in the Field". RFC now now a "Fighting Force" instead of observe and report.

December 1915 : Handley Page O/100 test flown.

1915 : At this initial stage of the movement, therefore, technical education in Canada is dealt with from the standpoint both of industrial needs and professional requirements. The former must of necessity be met by local agencies; on the contrary, young men aspiring to the higher technical careers have many inducements to complete their education in foreign countries. Representatives from the principal universities in Canada met at Toronto in the summer of 1915 to confer on this subject. At the conference it was declared "that at present the facilities for pursuing postgraduate courses, especially those dealing with technical matters, are extremely limited in Canada, and that large numbers of Canadian graduates go abroad and spend their time and money in foreign universities"

The opinion was expressed that "if postgraduate facilities were provided, this annual emigration would be gradually lessened and many students who remain abroad permanently after completing their courses would be encouraged to take up their residence in Canada."

### ADMISSION REQUIREMENTS FOR Canadian UNIVERSITY DEPARTMENTS.

In the several universities of Canada that have made provision for advanced technical education the admission standards are the same as those which lead to the liberal professions, the qualification of applicants being tested by an entrance examination covering the subjects of secondary education.

The duration of *the technical courses* is the same in all cases, i. e., *four years*, and in general the *courses are organized as a section of the faculty of applied science*.

Exception should be noted in the case of Laval University, Quebec, which provides for the technical studies in the affiliated polytechnic school at Montreal.

The following statement pertaining to the University of Toronto not only shows the scope of the technical education provided in that institution, but is fairly representative of the corresponding work in the other universities.

### UNIVERSITY OF TORONTO—FACULTY OF APPLIED SCIENCE AND ENGINEERING.

In 1877 the Provincial Government established what was known

## Notes on "Civil Aviation"

as the Ontario School of Practical Science, which in 1900, under enactment of University Senate, became the faculty of applied science and engineering of the University of Toronto. At present the faculty has at its disposal four buildings well equipped with the apparatus requisite for thorough training in the engineering professions. Candidates for admission to this faculty must be 17 years of age and must have completed at least four, usually five, years' preparation in a high school of the Province of Ontario, the last year being devoted especially to higher mathematics. The subjects covered by the high-school course are

:

- (1) Compulsory: English, history, mathematics, grammar.
- (2) Optional: Three chosen from Latin, Greek, German, French science (modern and science preferred).

The faculty of applied science and engineering comprises the following courses: Civil, mining, mechanical, electrical, chemical, and metallurgical engineering, architecture and applied chemistry.

The course in each is of four years' duration and leads to the degree of bachelor of applied science.

The average time given to instruction includes lectures 14 hours per week, laboratory 22 hours per week. In order to secure the bachelor's degree the student must successfully pass the examination in the work of each of the four years of the course, including both theoretic instruction and practical exercises.

The elaboration of the technical courses is illustrated by the following particulars relating to civil engineering, which is selected as typical:

First Year Subjects: Mathematics; surveying, including fieldwork; physics (statics and dynamics); chemistry; commercial accounting; a modern language and drawing.

Second Year Subjects: Mathematics; astronomy; surveying, including fieldwork; mechanics; physics and chemistry, including laboratory work; mineralogy; banking; a modern language; drawing.

Third Year Subjects: Mathematics; astronomy and geodesy; surveying, with fieldwork; hydraulics; theory of structures; materials of construction, with laboratory work

;

engineering chemistry; geodesy; photography; physics; drawing.

Fourth Year Subjects; Theory of structures and materials of construction, with laboratory work; electricity; thermodynamics; geology, contracts and specifications; thesis on an approved technical subject, and one of (a) astronomy and geodesy, (b) sanitary and highway engineering, (c) structural engineering, (d) strength of materials and railway engineering. The student may specialize on one of the options. Particularly in the final year the practical side of the subjects treated is emphasized.'

Robert Alexander Falconer – 1907-1932 U of T - Presbyterian convictions ... In his inaugural address a century ago, former University of Toronto president Robert Falconer emphasized the importance of civic service. "I believe that the nation should look to universities for distinct help in the present social conditions," he said from the Convocation Hall stage, with Prime Minister Wilfrid Laurier in attendance. "It must cause concern to thinking people that there is such an indifference on the part of the well-to-do to take up the burdens of civic and political life. source - <http://magazine.utoronto.ca/editors-note/robert-falconer-u-of-t-community-involvement/>

clergyman, scholar, educator (b at Charlottetown 10 Feb 1867; d at Toronto 4 Nov 1943). Falconer spent much of his youth in Trinidad, where his Presbyterian clergyman father had been posted. He was educated at London and Edinburgh universities, concentrating on classics and philosophy, and pursued postgraduate work at Leipzig, Berlin and Marburg, Germany. In 1892 he was ordained a minister in the Presbyterian Church in Canada and took up a lectureship in New Testament Greek at Pine Hill Divinity Hall, Halifax. Becoming a professor there in 1895, he was appointed principal in 1904. A royal commission appointed to investigate all aspects of the university had found administrative chaos and low morale. It recommended a complete constitutional reorganization and implicitly a new president in 1906. To the surprise of many, the 40-year-old Falconer was asked to replace James **LOUDON**. Much of Falconer's time and energy for the next 2 decades was given to executing the recommendations of the 1906

## Notes on "Civil Aviation"

commission. He inherited a collection of colleges; he left behind him an integrated university that led the country in industrial and scientific, as well as humanistic, research. Source ref - <http://www.thecanadianencyclopedia.ca/en/article/sir-robert-falconer/>

"Francis Vivian Drake was born in London around 1895. While a student there, he left the classrooms in 1914 to join the British cavalry. Soon afterward he transferred in 1915 to the Royal Flying Corps and later was sent to Canada to help form the " Royal Canadian Air Force"

RFC station Long Branch, an airfield located west of Toronto and just east of Port Credit. The airport was originally opened by the Curtiss Flying School, part of the Curtiss Aeroplane and Motor Company, as a pilot training school in 1915. The site became Canada's first military air training school but closed with the end of the war in 1918

Theodore Douglas Hallam - Canadian, learned to fly at the Curtiss School in Hammondsport, NY in 1914, was a private in a machine gun battery in the first Canadian contingent, became a sub-lieutenant in the RNVR serving with an armoured car detachment to the RNAS, sailed for Dardanelles, and in 1915 returned to the Hendon Air Station as acting Flight Lieutenant. He was posted to Felixstowe and became Commanding Officer of the War Flight in 1917

Cadet Ormond Whitby, School of Aeronautics, Toronto, Ont

Course 31 of "the RAF trained in Canada" - graduated school of aeronautics, Toronto, May 9, 1918

Course 34 of "the RAF trained in Canada" - graduated school of aeronautics Toronto June 6, 1918

CANADIAN AVIATION - 1916

1916 : British ARMY COUNCIL : Src - the Army List 1916  
FIELD-MARSHAL Rt. Hon. H. H., Earl KITCHENER OF KHARTOUM,  
K.G., K.P., G.C.B., O.M., G.C.S.I., G.C.M.G., G.C.I.E., Col. Comdt. R.E.,  
Col. I. Gds.. q.s.,  
SECRETARY OF STATE FOR WAR.

LIEUTENANT-GENERAL (temporary General) Sir W. R. ROBERTSON,  
K.C.B., K.C.V.O., D.S.O., Col. 2 Dns., p.s.c. [L],  
CHIEF OF THE IMPERIAL GENERAL STAFF

LIEUTENANT-GENERAL Sir J. S. COWANS, K.C.B., M.V.O., p.s.o.,  
QUARTERMASTER-GENERAL TO THE FORCES.

MAJOR-GENERAL (temporary Lieutenant-General) Sir C. F. N. MACREADY,  
K.C.B., K.C.M.G.,  
ADJUTANT-GENERAL TO THE FORCES.

MAJOR-GENERAL (temporary Lieutenant-General) Sir D. HENDERSON,  
K.C.B., D.S.O., p.s.c.  
DIRECTOR-GENERAL OF MILITARY AERONAUTICS.

MAJOR-GENERAL Sir S. B. VON DONOR, K.C.B., g.t  
MASTER-GENERAL OF THE ORDNANCE.

MAJOR-GENERAL R. D. WHIGHAM, C.B., D.S.O., p.s.c. [J],  
DEPUTY CHIEF OF THE IMPERIAL GENERAL STAFF

The Rt. Hon. H. J. TENNANT, M.P.,  
PARLIAMENTARY UNDER SECRETARY OF STATE FOR WAR  
• . (Civil Member),

H. W. FORSTER, Esq., M.P.,  
FINANCIAL SECRETARY (Finance Member)

Sir R. H. BRADE, K.C.B.  
Secretary

DEPARTMENT OF THE DIRECTOR-GENERAL OF MILITARY AERONAUTICS.

Director-General of Military Aeronautics ry ^ MAJ.-GEN. (temp. Lt-Gen.) Sir D. HENDERSON,  
K.C.B., D.S.O. p.s.o.  
( Bt. Lt.-Col. (temp. Brig.-Gen.) W. S. Brancker, R.A., i  
Director of Air Organization ( p.s.c. (temp.) | 27Mar.  
General Staff Officer, 1st grade { M Fufl ], pTc. fump.'l L ; E. Q. Charlton, D.S.O., Lan.  
Assistant Adjutant-General  
19Mar16  
I Maj. (temp. Lt-Col.) W. W. Warner, ret. Ind. Army / 27Mar.16  
(temp.)  
General Staff Officers, 2nd grade | Capt. B. C. H. Drew, 23 Pioneers, p.s.c. (temp.)  
( Capt. B. C. Fellows, ret. Ind. Army (temp.)  
.. I 9Mar.15  
/1 3118DFeebc.. 1156  
3Apr.16  
DeGpeunteyralAssistant ( 27Mar.16

## Notes on "Civil Aviation"

1 21Sept.15

Adjutant-] Mai D powe ll, R. w. Fus. [il (temp.)

General Staff Officer, 3rd grade 2nd Lt. (temp. Lt.) C. B. Krabbe, Berks. Yeo. (temp.) 18Feb.16

Staff Captain.\* ..

Staff Lieutenant .. .. Capt. C. F. Krabb6, T.F. Res. (temp.)

I Capt. I. M. Bonham-Carter, North'd Fus. (temp.)

{ Temp. Capt. Hon. E. E. Charteris (temp.) 282MApary.1166

Director of Aircraft Equipment .. { B R,E ^ p0 a.c.'Ti!'(fe mp:fe,! ' ) ,D 'S ' M .aeImlM ;

8May16

27Mar.16

19Feb.15

Assistant Directors

( Bt. Maj. (temp. Lt.-Col.) W. D. Beatty, R.E. (temp.).. 18Nov.15

Maj. (temp. Lt.-Col.) W. B. Caddell, B.A. (temp.)

Deputy Assistant Directors

/Capt. E. R. L. Corballis. R. Dub. Fus. (temp.)

j) MLaji.stB. .TH.Fo.p(kteimnspo.)n, M.I.E.E., M.Inst. C.E., Unattd.

iCapt. F. C. Jenkins, R.F.C., Spec. Res. (temp.)

d. / 2371M0cart..li56

..{ 2255Nov.15

27Mar.16

fHoRn.F. .CLt.(M(te.Wmp.). (Cteamptp..)in Ar.m. y) T...Lyons, Qr.-M..r. 15Sept.14

I CCAapptt.. AP. GR.. GClraarcke,,RR..FF.CC.,,SSppeecc..RReess..((tteemmp..)) .... liAAuuke 1155

Staff Captains <J GCA ap p( t. CL . v W..SC..BWlahcekaetrl,eyC,oRrp.sFoCf.G, Supideec.sR(teesm.(pte.)mp.) .... 2217SMepatr  
11e5

TeCmapm.b.LtR. . ((tteemmp..))Capt... in Ar.m. y) H... A. P...Disney., iMayie

.TTeemmp.. CCAapptt.. JL.. SS.aNdlicrh,oAls.So.nC(.te(tmemp.)p.),,, .... # .# . 88MMAayvi166

/LHte. nE..LSt.. SWk.ipJp.eDr..RPrFy.cCe.,,QSrp.-eMc.rRRes.F. .(Cte.m(Mp.).W..) (temp...)21L8Aeupfft.1156

Lt. W. W. W. ^ Reilly, Conn. Rang. (temp.) .. .. 19Apr 16

Staff LieuttnavU ^ i %

Temp. Capt. R. A. Coote (temp.)

Lt. (Dist. Oftr ) C. Mason, R.A. (temp.)

2n(dteLmp. .)(t.e.mp. Lt.) F. L. Mond, 6Lond. Brig. R.F.A. Temp. 2nd Lt. H. W. Fear, R.A. (temp.)

2TnedmLp.t.2Jn.dNL.t.MHe.arMn.s,BRen.Ftl.eCy.,(Stepmecp..)Re.s.. (temp.)

\2nd Lt. M. O. Darby, R.F.C., Spec. Res. (temp.)

8May16

8May16

8May16

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8Ma.\ 16

. Attached from Secretary's and Finance Depaitments.

Principal .. A. E. Turner, Esq. (\cting)

Accountant „ . \* .. F. R, St iple, JLeo. (aetf.ip)

### AERONAUTICAL INSPECTION DEPARTMENT.

Chief Inspector Haguall-WUd, Capt. {temp. Lt.-Col.) B. K., Kea.

of OH.

Assistant Inspector (Assistant to ChiefInspector) Myera, H , Esq. (temp.)

Inspector of Engines ( Verney, Lt. (temp. Capt.) R. H., A.S.C

1 Halford, Temp. Hon Capt. F. B. (temp.)

, Buiman, 2nd Lt. G. B., R.F.C., Spec. Rea. ..

Assistant Inspectors of Engines BI Rooossr,, AA...,AA.',sqE.'s(ofe. m(f«pm.)p.)

Iv SFmielidth,,TPe.mWp..CEasqp.t.(tGem. Kp..) (temp.)

Inspectors of Aeroplanes

f Cockbnm, G. B.t Sag. ..

Ellerton, A. S., Esq. (temp.)

L Windsor, M., Esq.

## Notes on "Civil Aviation"

### Assistant Inspectors of Aeroplanes

PMixatnosne, lLl, t.L (fte.mLp. .TO.aGpf., 2RiV.Fat.MC.5S) Cpe.Hc., RRe.Fa..C(.tSempepc.) .Re.s.  
TOhuutrrasmto,n,L2tn. d(tLemt. pA.. CPa,pRt.) .FH.C.. SWp.ecS., RAes..M.I E.E.i Lond. Elec. Eng  
Steele, A. E., Esq. (temp.)

Assistant Inspector of Materials : Philpot, H. P., Esq. (temp.)

### ROYAL FLYING CORPS "Per Ardua ad Astra" CENTRAL FLYING SCHOOL - Upavon, Salisbury Plain :-

- I. Commandant
- II. Assistant Commandant (graded as Wing Commander)
- III. Adjutant
- IV. Medical Officer
- V. Equipment Officer
- VI. Instructor in Meteorology
- VII. Instructors in Flying
- VIII. Instructor in Theory and Construction
- IX. Officer in charge of Transport (graded ins Flight Comdr.) /
- X. Officer in charge of Experimental Flight (graded as Squadron Comdr.)

(Kly. Sens., Pewsey, G.W.B, and Lndgershall, Mid. \* S. W.K.)

J

Burke, Bt. Maj. (temp. Lt.-Col.) C. J., D.8.O., K. Ir.

Regt. (temp.)

Todd, Capt. (temp. Maj.) G. E., Welsh R

MacEwen, Maj. N. D. K., Arg. & Suth'd Highrs

Keenan, Temp. Capt. J., F.R.C.8.I., R.A.M.C

LeWck, ^Hon ^Lt. (temp. Capt. in Army) A., Qr.-Mr.

Dobson, Temp. Capt. G. M. B

Gould, Lt. (temp. Maj.) C. G. 8., R.A. .

Mills, Lt. demp. Maj.) G. D., Notts. & Derby. R. "

TGirlennefy, l2l, nLdt.L (tt.e(mtepm. Cp.aCpta.) ptE. .iOn .A, Rrm.Ay) L. A., D. of Lane. Own Yeo. ..

BaSlpceocm. bRee-sBrown, Lt. (temp. Capt. in Army] R., R.F A

Hill, Lt. (temp. Capt.) G. D., 7 Hrs. ..

Landon, ^ugUtemp.Maj. inArmy) J. H. A., 4 Bn.EssexR.

Tennant, Capt. (temp. Maj.) J. E., S. Gds

### NAVAL WING (R.N.A.S).

Director of Air Services : Rear-Admiral C. L. Vaughan-Lee,

Superintendent of Aircraft Const-ruction : Capt. M. F. Sueter, C.B., R.N. (Commodore 1st Class)

### MILITARY WING (R.E.C.)

Agents—Messrs. Cox \* Co.

Record Office .. South Farnborough. | Recruits' Depot .. South Farnborough.

N.B.—The second date after an Officer's name is that of his Army, dtc., rank.

Henderson, Maj.-Gen. (temp. Lt.-Gen.) Sir D.t K.C.B., D.8.O., p.s.c. (Dir. Oen. of Mil.) 5Aug.14

BeaAtteyr, oBnat.utMicsa)j. ((Ot.e0m.Cp.) Lt.-Co.l.) W. .. (Asst. .D. irecto.r. ofMi.l.itary A..eronau.t.ics, War

Office.) .I( 1236N0ocvt..ll46 Cor(btaelmips,) Capt...E. R. L..., R. Dub. Fu..s. (Dep.. Asst..D. irecto.r. ofMi.l.itary A..eronau.t.ics, W.a.r Office)) l S3lJ Ouente.llf6t

(temp.) .. .. . t o2f8tMApart.116r i Broke-Smith, Capt. (temp. Maj.) P. W. L., R.E. (Dep. Asst. Dir. of Aviation) .. .. isAug.lo

Equipment Officers : Assistants : "*Officers in charge of Workshops graded as Flying Officers*" <sup>77</sup>

### RESERVE

Flying Officers.

<sup>77</sup> The Army List, June 1916 pg 197b

## Notes on "Civil Aviation"

Cook, Lt.-Col. (temp. Brig.-Gen.) H. R., Forman, Lt.\*Col. A. B., D.S.O., R.H.A. .. 14Aug.18  
CaRm.Aer.o[nLJBat. Lt. Col. (temp. Brig.-Gen.) N, 23JunelS Ellington, Bt. Col. E. L.. R.A., p.a.c., a. .. 17t>ec.13  
J.6., Cam'n Hlghrs.,p.s.c.,8 17Dec.13  
SPECIAL RESERVE.  
Captains  
Grace, P. R. (Staff Capt.. Mil. Aeronautics Directorate) \* 1Sept.15  
JCelnakrkin, As.,FG..C(.S(taSftfaCffaCpat.p,tM. Mil.ilA. AereornoanuatuicisicDs iDreicretocrtotrea)te) l23SNepotv.1.l65  
Wheatley, C. W. C. (Staff Capt., Mil. Aeronautics Directorate) .. 25Mar.16  
Lieutenant.  
Skipper, E. 8. (Staff Lt., Mil. Aeronautics Directorate) lApr.1G  
2nd Lieutenants.  
TTahyulorsrt,oGn., Al.. (Pte.mp. Maj. in Army)  
MDeairrencs,toJr.atNe). (Staff Lt. Mil. Aeronautics  
Darby, M. O. (Staff Lt. Mil. Aeronautics  
Directorate)

An important feature of the War in 1916, as in the preceding period, was the continued loss of men of noble families and historic names. The British aristocracy was being depleted by the death of its members and sons.

Amongst the sons of famous families who fell\* during this year were the following :

Lieut. Ivan Campbell grandson of The 8th Duke of Argyll.  
Viscount Weymouth son and heir of The Marquess of Bath.  
Lieut. Raymond Asquith Eldest son of The Premier.  
Lieut. The Hon. G-. J. Goschen Son and Heir of Viscount Goschen.  
Lieut. The Hon. Harold Tennyson, E.N. son of Lord Tennyson.  
Capt. Lord Desmond Fitzgerald brother of The Duke of Leinster.  
Capt. The Hon. R. S. A. Palmer son of The Earl of Selborne.  
Capt. The Hon. J. C. W. Saville-Poljambe brother of The Earl of Liverpool.  
Lieut.-Com. The Hon. H. C. R. Fielding son of The Earl of Denbigh.  
Capt. The Hon. J. B. Campbell son and heir of. Lord Stratheden and Campbell.  
Lieut.-Col. Arthur Lister Nephew of Lord Lister.  
Lieut. The Viscount Clive son of The Earl of Powis.  
Lieut. The Hon. V. S. T. Harmsworth, son of Lord Rothermere.

General the Earl of Longford, Capt. Lord Petre and Major Lord Llangattock, were amongst the Peers killed,

Lord Tennyson not only lost a son but a second son was wounded twice during the year.

Up to Aug, 31, 1916, ten Peers had been killed, 18 wounded and 11 taken prisoners; 240 altogether (out of about 600 members of the House of Lords) were on active service and 28 had been mentioned in despatches.  
The House of Commons record showed to the same date 215 members who were or had been at the Front, with 8 killed, 14 wounded and 4 prisoners of war, while 31 had been mentioned in despatches.  
Dehrett's list or roll of honour, at the close of 1916, of the sons of families mentioned in its pages, who had lost their lives, was 1,450 including one member of the Royal family, 14 peers, 21 baronets, 9 members of Parliament, 200 knights, 114 sons of peers, 110 sons of baronets and 150 sons of knights.

So far as Great Britain and practical war-results were concerned the Zeppelin policy and raids up to the close of 1916 were distinct failures.

While killing 127 non-combatants, 92 women and 57 children up to Mar. 1 of 1916 year they had served no military or strategical purpose though costing Germany large sums of money to build and maintain.

It would seem, also, that no single detail in the War so helped recruiting and so strengthened Lord Kitchener's hand as did the 24 raids up to this time. As with Zeppelins so with enemy Aeroplane raids.



## Notes on "Civil Aviation"

On Feb. 22 1916 it was stated in London that 80 Zeppelins were then in commission and that 25 had, so far, been destroyed by the Allies. Meantime Britain had been making gigantic efforts to meet the situation, defend rural England and London itself, supply the Navy with Aeroplane scouts and give the Army eyes which would see the enemy-side and act, also, as guards over the British trenches.

At first she was greatly behind others in this branch of defence and offence ; then matters slowly improved and, as young men of eagle sight and courage poured into the Royal Flying Corps and the War Office put its constructive energy into the effort, the progress became phenomenal.

Speaking at Edinburgh on Sept. 12, 1916, Lord Montagu dealt with the slowest part of this development when he pointed out that in 40 Zeppelin raids, with 120 airships in defence, the first Zeppelin had only just been brought down on British soil.\* As to the Army it was different and the military branch in France had recently brought down 27 Fokkers —the new and improved German machine—and were then masters of the air.

It was stated a little before this that during a specific period the Allies had crossed the German lines 1,227 times and the Germans had come back 310 times. The French had been the first to specialize in these machines and they had one of different qualities for each of varied kinds of work—a line which the British quickly imitated. Then came air-squadrons and great air battles, or bombardment expeditions to German military centres with big planes carrying machine-guns and bombs. A special British development was the artillery observation machine equipped with wireless and reporting the effect of artillery fire on enemy lines. Lieut. Floyd Faulkner, r.f.c, of Toronto, stated in New York on Dec. 31 that "The machines used on the battle-front are much in advance of any used over here, A new machine, whose name may not be mentioned, makes 138 miles an hour and is only arriving at the Front now. It can ascend straight up without banking, and has reached 15,000 feet in seven and a half minutes. This makes it the ideal machine for Zeppelin work, as it can get height quickly enough to catch the dirigibles. It is the greatest fighting machine in the world, and wUl guarantee that we maintain the supremacy of the air, so necessary in this war.

Meanwhile there had been much discussion in England over the failure of the Aerial Service, up to the middle of the year, in eliminating the Zeppelin. It was forgotten that British attacks and skill in defence, if they did not capture or destroy the enemy, did drive the Zeppelins away, prevent serious damage and save the historic buildings, great munition plants and famous cities of the country. An Air Board had been established on May 24 with Lord Curzon as President, and Lord Sydenham, Admirals Tudor and Vaughan-Lee, Generals Sir D. Henderson and Branker, Major Baird, m.p., as members. It was to think out and formulate a policy of defence and took the place of a Committee which had little real power. Difficulties between the military and naval wings of the service still continued, however, and it was not till the latter part of the year that organization, initiation, construction and training of men had combined to evolve a wonderfully complete and effective system,—which between June 1 and Dec. 1 resulted in the destruction of 666 German machines compared with the loss of 203 British and 198 French. In December, 1916, Lord Cowdray of Midhurst became Chairman of the Air Board.

26th January "Baby" floatplanes Nos.8152 & 8153 are tested by Harry Hawker at Felixstowe. The next day he is at Yarmouth acceptance testing Nos.8149, 8150, 8156 & 8157 and "Schneider" No.3776. No.8149 suffers an engine failure. He stays another night to accept "Baby" floatplanes Nos.8163 & 8164 at Yarmouth on 28th January. Whilst five of these arrived very recently, four have been waiting over two weeks.

The full pro-forma report of the 24th January trials of the first Sopwith "LCT 1½ Strutter" signed by Lieutenant Colonel D Pitcher Commandant of the Central Flying School at Upavon has arrived at RFC Headquarters in London and is despatched on 29th January 1916 to Major-General Trenchard commanding the RFC in France. In the report the Basic Description includes: "Wing span 33'7", Tail span 13'6", Fuel 40 galls, Oil 10 galls, Weight full tanks and equipment no crew 1502 lbs". It continues with Further Particulars: "Empenage (tailplane) is bodily adjustable from the pilot's seat. Bombs can be carried under passenger seat without ballast and empenage adjusted after release. Bomb sight is almost impossible to use with the present wings. Passenger seat swivels with provision for a circular gun mounting. Facilities for firing by passenger: Upwards Good, Downwards Fair, To the rear Good. Planes have only one pair of outside struts and no lift wires are fitted under the bottom plane. The factor of safety would appear very low if one of these struts be shot away or damaged. Air brakes are fitted to lower planes close to fuselage. In action they cause a lot of vibration. The engine cowl is of very light metal and easily cracks and

## Notes on "Civil Aviation"

dents. The gun complete with jacket was mounted about 30° to the centre line pointing forward strapped to the circular rail. Time to prepare engine for starting: 1-2 mins." Speed trial: "Wind: West 15 mph, Weather: Fine, Passenger: 11½ stone, Test height: 6-10 feet, Course: 4026 feet, Average speed without gun: 107.2 mph, with gun 105.1 mph, Minimum speed: about 55mph on ASI." Climbing trials: Time to height & rate of climb over latest 1,000 feet in ft per min: 2,000ft 2mins 1,000; 4,000ft 5m5secs 670; 6,000ft 8m45s 630; 8,000ft 15m5s 385; 10,000ft 21m 310; 12,000ft 28m 285; 14,000ft 50m 63. Suggestions for improvement of design: "The machine gets off easily and quickly and is undoubtedly fast, a good climber and easy to fly. She is very nearly automatically stable; far more so than most so called stable machines other than the BE2c. The machine is easy to land but requires an abnormal amount of landing room and could only be landed by average pilots (even with air brakes on) in very large fields. The air brakes make a difference of almost 100 yards. Wheels are much too far back and would (be) certain to turn machine over in plough (sic) or heavy ground. Possibly the shifting forward would reduce landing run."

On 19th July after only five days with 70 Sqdn "1½ Strutter" A386 is in combat with enemy aircraft near Cambrai and is lost in action, both Lt Hele-Shaw and 2nd Lt Oakes are killed.

After failing to get a uniform minimum wage of 1/- (1 shilling) an hour for all woodworkers in the aviation industry the London District Committee of Trade Unions have made a further demand that the same rates are paid as in the building trade: a minimum 11½ pence an hour for woodworkers and wood machinists and a minimum 1/- an hour for spindle hands. This has again been rejected by the companies including Sopwith and passed to the Board of Trade Committee on Production who, on 17th July, conclude that "rates should not necessarily be linked to those paid in the building industry where many employment conditions are dissimilar".

Nationally there is deep concern amongst traditional skilled workers that dilution (unskilled people mostly women and boys trained for a specific skilled task) is threatening their jobs and pay rates and jobs for skilled men returning after the war. Exacerbated by Ministry of Munitions circular L2 suggesting women should be earning a minimum £1 a week and urging equal pay for women, this has led to strikes not least on Clydeside in Glasgow from March to mid June. At the Beardmore aircraft factory at Dalmuir where the order for 50 Sopwith "Pups" has now been confirmed, demarcation disputes have led to the employment of Belgian refugees on sheet metal work. However, the use of dilutees is seen by many as inevitable and accepted on promises or understandings that they will be first to go when the war ends and any available skilled men will be taken on.

1 April 1916 : The Royal Naval Air Service Central Training Establishment Cranwell opens under the command of Commodore Godfrey Paine CB MVO Royal Navy. Cranwell includes a Boys' Training Wing to train young RNAS ratings as air mechanics and riggers.

17 May 1916 : (St. Andre') <sup>78</sup> — We started for St . Omer at 9 for the First Aircraft Depot "1st A.D", the First Aircraft Depot at Candas, a village which is on the way to Amiens.

We arrived about an hour later .

One Bristol is now ready, and will be sent with overhead top gun-mounting to No . 11 . Squadron.

This news was wired from the First A.D. Another wire was sent asking whether they can send us from home one of the Sopwith interrupters .

The Nieuport seat is to be altered—for an eccentric one .

The wire less transmitter is to go at the back of the observer's seat if the lip can be cut away.

There were many other notes made at the Depot and still more at the Squadrons .

No . 29 Squadron . The Squadron had been mixing French and English gear in the Monosoupape engine Not having all English gear they put in all French gear. This practice is to cease . But how and why did they get French gear? That is the question. The Squadron didn't know whether the parts were English or French. No French spares are to be used unless they have no English ones , and then the G.O.C. is to be informed. All French gear is to be returned.  
Sparkling plugs are giving trouble .

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<sup>78</sup> Personal recollection of RFC Officer MAURICE BARING in his account of the War 1914-1918 " RFC Headquarters. G.Bell and Sons Portugal St. London WC2 pp

## Notes on "Civil Aviation"

The First A.D. was wired to for English cam- gear. French spares , which had not been intended for , had been sent . Satellite-wheels which were really English were sent out as French.

Bronze obdurator rings were wanted instead of brass ones .

An endurance test for the tankage of the De Hav. is to be done at once .

At No . 6 Squadron the Le Rhone engine , No . 5311, was not working well .

R.A.F. wires were reported almost invariably bent when new.

At No. 1 the question of putting fabric over the hinges of the planes (as in the Morane biplane) was discussed. They have only one Le Prieur sight .

What has happened to the 19 others ? No. 7 Squadron were one machine short . Other points that cropped up were the throttling of the 110hp Le Rhone parachute flares that failed to go off split pins that were not supplied when asked for and the lamentable case of a Bristol that was sent to No . 13

Squadron and put every bullet into its propeller with the Vickers gun! it not having been fired at the Depot , and another sad case of a machine which was received from the Depot yesterday, rigged completely wrong, and in which the engine vibrated badly; but this is not nearly all...

by 1918 there were 500 RNAS boys in training at Cranwell, with numbers planned to rise to 1,500.

With the formation of the RAF in April 1918, boys' training was to be concentrated at Cranwell but, as the new brick buildings at East Camp were not yet completed, tents were used for the 300-plus RFC boys who arrived in April – from Halton of all places.

In time the boys' numbers were to rise to a total of 2,500.

Prince Albert was appointed to RNAS CTE Cranwell on 1 January 1918, and arrived in February 1918. He served initially as Officer in Charge of Boys, and later as OC 4 Sqn in West Camp. became the first member of the Royal Family to gain his pilot's certificate. He was also the only member of the Royal Family (and future King) to be married in RAF uniform.

RAF Boy Mechanic and Apprentice Training, 1918-1926 the new Air Ministry intended from the outset to create a permanent home for technical training at Halton it was decided to use Cranwell for the training of boys for the RAF until there was enough permanent accommodation at Halton.

Plans called for a student population of 2,000, with an instructional staff of 25 officers and 340 airmen.

The new barrack blocks and other accommodation, begun by the RNAS, provided the wherewithal to do this, giving the boys (for the first time) hot water, real beds, mattresses and sheets. Prince Albert's Boys' Wing became a Boy Mechanics School and then a Boys' Training Wing, before being renamed as No 2 School of Technical Training (Boys) in March 1920. In April 1921 it became the Boys' Wing of the Cadet College Cranwell, which remained its name until October 1925 when it became No 4 (Apprentices) Wing.

### The Apprentice Scheme

(originally known as the Boy Mechanic Scheme) was promulgated to local education authorities in November 1919, and formally opened on 26 April 1920.

Boys were nominated by these authorities, or by certain schools, to undertake an examination set by the Civil Service Commissioners at one of 15 regional sites.

Those successful in the four-part examination (mathematics, experimental science, English, and a general paper) would be medically examined and attested for 10 years' regular service with a further two years in the reserve.

The first entry of 235 boys, selected against 300 vacancies with plans for 1,000 per year, set off for Cranwell on 18 January

## Notes on "Civil Aviation"

1921.

Their food, lodging and uniforms were provided free, and they were paid 1/6 per day if under 18, and 3/- per day if over 18.

Other rates of pay in 1921 for comparison were:

Aircraftman 2nd Class: 4/-

Corporal: 7/9

Sergeant Major 1st Class: 13/-

Cadet: 5/-

Flying Officer: £1 3/-

Wing Commander: £2

Air Chief Marshal: £7

If desired, boys could buy themselves out of the Service for £20 within the first three months, rising to £100 thereafter.

These first Boy Mechanics (the term Aircraft Apprentice was not adopted until the move to Halton) were taught two groups of school subjects. The first group comprised English, literature and history; and the second group consisted of mathematics, physics and theory of flight.

The boys also received practical workshop training in repair and maintenance, initially in the old RNAS workshops in West Camp.

Indications are that the latter was broader, though not as thorough, as the training that would be provided at Halton.

There were regular sporting contacts, but virtually no social interaction – in those days officers and airmen seldom met except on duty. In fact, the airmen seemed to be extremely conscious of their status and certain well-defined rights that officers were at pains to respect.

The typical working routine consisted of: working in classrooms and workshops Monday to Friday, except for Wednesday afternoon sports; Saturday morning – drill, and inspections of boys and barrack blocks; and Sunday morning – church parade.

Boys were allowed out of camp on Wednesday afternoon after obligatory sports, and on Saturday and Sunday afternoons.

Boys over 18 were allowed to smoke, but only while off camp.

Air experience - flying for boys was provided on the North Airfield in the Boys' Wing's own aircraft – a Vickers Vimy, a DH9A, 2 Avro 504s, and a Bristol Fighter with a Falcon III engine. Cranwell remained 'overspill' for apprentice fitters and riggers until 1926. In 1924 there were still 981 boys in training at Cranwell, as by December of that year there was still only accommodation at Halton for 2,000 apprentices against the eventual need for 4,000. In October 1925, the Boys' Wing became No 4 (Apprentice) Wing and the last remaining Apprentices (Entries 9-14) moved from Cranwell to Halton in August 1926 – taking with them the tradition of the apprentice Pipe Band. All apprentice training was now concentrated at Halton, with the exception of electrical and wireless training at Flowerdown, near Winchester, and armament and gunnery training at

Eastchurch, near Chatham in Kent.  
The last entry to complete training at Cranwell was No 8, among whose 600 boys was Frank Whittle, who had joined as an apprentice rigger in September 1923. Whittle was amongst 18 Cranwell boys who were awarded cadetships at the Cadet College; three of these went on to win College Prizes, and one was the first aircraft apprentice to be awarded a Wakefield Scholarship to the College. The Cranwell boys' Wing had also produced over 60 corporals and some 600 Leading Aircraftmen (LACs) between 1920 and 1926.  
With the departure of No 4 (Apprentice) Wing in 1926 there was no Boy or Apprentice training at Cranwell until the arrival in August 1929 of the Electrical and Wireless School (E&WS) from RAF Flowerdown. an RFC School for Wireless Operators was formed in 1915 in the Town Hall in South Farnborough. In 1918 with the formation of the RAF these units were combined to become No 1 (T) Wireless School RAF at Flowerdown, renamed as the Electrical and Wireless School in July 1919. From 1922 the Electrical and Wireless School played its part in the RAF Apprentice Scheme, with the top 40 apprentices in each intake being sent to Flowerdown for training in what were seen as the most technically challenging trades. it was not until 1929 that the School (at that time coincidentally under the command of Gp Capt A L Godman, who had been the first Assistant Commandant of the RAF Cadet College at Cranwell in 1920-21) moved to East Camp at Cranwell. The Electrical and Wireless School trained officers as well as apprentices, and, from 1934, boy entrants were also introduced after a reorganisation of the electrical and signals trades. By 1936 the School was divided into two wings: No 1 Wing – training airmen as wireless operators (1,103 men under training); and No 2 Wing – 152 aircraft apprentices training as Instrument Makers; 573 aircraft apprentices training as wireless operator/mechanics; 575 boy entrants training as wireless operators; officers on the 14-month Officers' Long Signals Courses, and a variety of refresher courses.  
No 1 E&WS had its own aircraft, which flew from the North Airfield at Cranwell. By 1939 these included Westland Wallace and Wapiti, Vickers Valentia, Tiger Moths and Miles Magisters. By the outbreak of war in September 1939 there were 2,500 officers and men under training in East Camp, compared to 150 or so in West Camp. Courses included:

RAFVR Officers Signals 6 months.  
Aircraft Apprentice 2 years.  
W Op/Mech  
Boy Entrants W Op 1 year.  
Airmen W Op/Mech 32 weeks.  
Airmen W Mech 8 weeks.  
Air Gunners W Op 12 weeks.  
Airmen Teleprinter Op 5 weeks.

Nobel Prize winner 1979 received the  
Nobel Prize for Medicine for his work on  
computer-assisted tomography – what we  
know today as the CAT body scanner.  
Cpl (sir) Godfrey Hounsfield was a Radar  
Mechanic Instructor at Cranwell where,  
in his spare time, he sat and passed the City and Guilds examination in Radio  
Communications.

T E Lawrence served at Cranwell as AC2  
Shaw 1925-26, and observed: "But there is  
rising up a second category of airman, the  
Boy Apprentice . . . Soon the ex-boy will be  
the majority, and the RAF I knew will be  
superseded and forgotten . . . The airmen  
of the future will not be owned, body and  
soul, by their service. Rather, they will be  
the service, maintaining it, and their rights  
in it, as one with the officers . . . The ex-Boys  
are professionally in the RAF as a privilege,  
making it their home. Soon, when they  
have made their style felt, officers will only  
enter their airmen's rooms accompanied,  
by invitation, guest-like and bare-headed,  
like us in an officers' mess . . . The era of  
a real partnership in our very difficult  
achievement must come, if progress is to  
be lasting."

source : RAF SOTA Vol 3 No 1-2, 2008 Boy and Apprentice Training at Cranwell 1916-1952 By Wg Cdr Andy Tait.

February 1916 : during this period a minor agitation was going on against the use of poisonous dope in air-craft factories. Numerous aircraft workers had died from its effects. An official letter had been sent out "desiring" that dopes other than those, supplied by the Royal Aircraft Factory should not be used, and this despite the fact that dopes absolutely free from poison actually existed. - The Aeroplane, January 1917 - review of the previous year.

On **9<sup>th</sup> March 1916** the London District Trade Union Committee for Aircraft Industry writes to Sir George Askwith at the Ministry of Labour Industrial Department. They list the fifty-five "aircraft companies" in London (including Sopwith) that they wrote to on 22<sup>nd</sup> February with an application for an extra 2p per hour for workers earning 1s or more per hour and 3p extra for those earning less than 1s per hour. "The companies have made no promise to pay workers in accordance with this application. We therefore request that the matter be referred for settlement in accordance with the provisions of the Munitions of War Acts 1915 & 1916." This application for more pay for "woodworkers and erectors, woodworking machinists and men working on fabric, doping and polishing" is the Trade Unions' latest move following Sir George's Board of Trade Committee rejection of their previous application for standardised rates of pay for all aircraft workers. (source : <http://www.kingstonaviation.org/100-years-ago/1916.html>)

## Notes on "Civil Aviation"

13th March 1916 : The prototype Sopwith 80hp single-seat Scout biplane has now been with the Admiralty for testing and their single-page report reveals extraordinary performance for its modest power. Speeds between 106 and 110mph are recorded at heights up to 10,000ft and it reaches 5,000ft in 5 minutes. "This machine is remarkable for its performance, ease of handling and for the quickness with which it can be manoeuvred. It is easy to land, landing at from 25 to 30mph." They go on to confirm "the view is equal to that of the Nieuport except straight down" and record "that propeller clearance is very slight but later machines will have a higher chassis, double streamlined wires and an adjustable tailplane to compensate for the weight of different pilots." "The Vickers gun 500 round belt is fitted outside the fuselage along the top of the (engine) cowl and trued through the propeller". This is the first record of a machine gun mounted to fire through the propeller on a Sopwith machine. Sopwith foreman Harry Kauper is developing a mechanical synchronising mechanism which only allows the gun to fire when the propeller is out of the way. Vickers-Challenger and Scarff-Dibovsky are similar mechanisms urgently being produced to emulate those which have proved so effective on the German Fokker Eindeckers. The Admiralty immediately sets about purchasing this prototype 80hp Scout from Sopwith. Their test report is sent to the Royal Flying Corps and forwarded to Maj Gen Hugh Trenchard General Officer Commanding the RFC in France who pencils a margin note addressed to his Quartermaster General "Let us get a squadron of these". (source : <http://www.kingstonaviation.org/100-years-ago/1916.html>)

Sunday **19th March** 1916 : a "Schneider" from Westgate and "Baby" from Grain are amongst 30 aircraft sent out to intercept six German floatplanes which attack Dover, Deal and Ramsgate in broad daylight killing 14 and injuring 26. After the first 'air battle' witnessed by civilians, two Germans are eventually forced down at sea. The performance tests and fighting potential of the Sopwith "1½ Strutters" have caused quite a stir in the Royal Flying Corps as well as the Royal Naval Air Service. The RFC are ready to place significant orders but Sopwith are a primary Admiralty supplier and already running behind with their ambitious programme of deliveries to the RNAS. Consequently Sopwith have negotiated a royalty agreement with Ruston Proctor in Lincoln to allow them to build "1½ Strutters" for the RFC. Like Robey & Co who have been building 30 Sopwith Gunbuses, Ruston Proctor & Co are a long established agricultural and general engineering company. Ruston Proctor are larger with works covering 100 acres and over 5,000 employees. Since January 1915 they have built 100 Royal Aircraft Factory BE2c two-seaters for the RFC and are now working on an order for 100 BE2d and BE2e variants.

On **27th and 29th March** 1916 : the Royal Flying Corps' Central Flying School at Upavon conduct their own performance tests on the prototype 80hp Le Rhône powered Sopwith Scout. They report slightly lower performance than the recent RNAS tests. A top speed at ground level of 101.9mph with full tanks, a 12 stone pilot and a 15 mph cross wind is still impressive with such modest power, as are the 53secs climb to 1,000ft, 5mins 10secs to 5,000ft, 13mins 10secs to 10,000ft and 25mins to 15,000ft. Maj Gen Hugh Trenchard has already written that "We should have a squadron of these" in France and these tests may be an essential step towards the RFC placing an order. **27th March** the Admiralty report on outstanding aircraft orders and "anticipated deliveries" includes: Sopwith "Type 860" large floatplanes: 8 only delivered of last 12, orders held pending further alterations. Robey built Sopwith "Type 806" gunbuses: 22 delivered of 30, 8 waiting accommodation. Sopwith "Baby" floatplanes: 86 delivered of 100 - 1 promised 1/4/16 & 3 per wk. Sopwith "1½ Strutters": 6 delivered of 50 with another 102 to follow - 3 promised 1/4 & 3 by 8/4/16. Remarkably Sopwith have now been instructed to deliver 30 of the Admiralty "1½ Strutters" directly to the RFC. **31st March** six German Navy and Army Zeppelins bomb London and East Anglia killing 48 and injuring 64 people. RNAS Yarmouth get no early warning due to gale damaged telephone lines so the only Sopwith response is a fruitless early morning patrol by "Baby" No.8163. There are 24 defence sorties overnight by the RNAS & RFC, one pilot is killed taking off in mist and at least 6 aircraft are wrecked but three pilots do see L15, one gets in some shots and another drops Ranken darts onto her. She is one of two hit by anti-aircraft fire and lands broken-backed off Margate. The crew less one who drowns are captured by a British destroyer. **10th April** the seventh "1½ Strutter" RNAS No. 9381 arrives at Brooklands for testing. This is the first to be re-allocated to RFC (Military Wing) from Sopwith's RNAS order and will have to be re-painted with the RFC serial number 7942. The Admiralty has been convinced of the RFC's greater need for some of these fast long-range two-seaters having been told of the secret plans for a major offensive in the summer by British and French Armies on the Western Front. Deliveries from Ruston, Proctor & Co against the RFC's own order cannot possibly be made in time. The planned summer offensive in the Somme has the additional important aim of drawing German forces from the Eastern Front to relieve the overwhelming pressure on the Russian allies. There is a story going around that the RFC's recently appointed Director of Air Operations, Brig Gen Sefton Brancker, has been to Brooklands and when seeing Sopwith's prototype 80hp single-seat Scout alongside the larger two-seat "1½ Strutter" declared - "Good God! Your 1½ Strutter has had a Pup." True or not, the name has stuck and everyone is calling it the Sopwith "Pup". **13th April** sees the first meeting of the recently formed Society of British Aircraft Constructors (SBAC). The Sopwith Aviation Co is a founder member with General Manager R O Cary on the Committee of Management. Aeroplane reports that "practically every firm of standing in the industry has signified its approval of the objects of the society" which are to encourage, promote and protect



## Notes on "Civil Aviation"

the British aircraft industry and protect the general interests of companies, firms and persons engaged therein. Underlying these laudable long term objects is the urgent desire to speak as one to Government about the way excess profits are calculated and the impending increase in the tax on those excess profits to 60%. Excess Profits Tax is popular with the public and the Treasury but very contentious with these rapidly expanding young companies who need to use their profits to expand facilities and purchase equipment possibly beyond any likely commercial requirement once the war is over. The 60% tax is applied to profits in excess of the company's pre-war levels or to profits exceeding 6% of capital employed. For those with no pre-war financial history it is on profits exceeding 9% of capital employed. Noel Pemberton Billing, newly elected Independent MP for East Herts, has started to harangue the Coalition Government with his views on the failings of the Royal Aircraft Factory and the RFC. He is judged by many to have gone too far when declaring that the dependence on BE2 machines and RAF engines is negligence tantamount to the murder of our airmen. His evidence for this is to be assessed by an Air Enquiry Committee. When asked what taxpayers are paying Mervin O'Gorman to run the 3,223 strong Royal Aircraft Factory, the Minister replies that it is £3,000 p.a. with his four senior managers on £450 to £630 p.a. When skilled workers are earning around £150 per annum, the implication is that £3,000 p.a. is a very large salary. It is not generally known that leaders of private aircraft companies are paying themselves up to £10,000 p.a.



May 11, 1916 : The first UK Air Board constituted with Lord Curzon as chairman.

19 May 1916 : Dispatch from General Haig commends the work of the R.F.C., and lays special stress on the development of the technical side of the Corps, such as in photographing, wireless, bombing, and in keeping machines in good condition.

05 July 1916 - The Aeroplane : full particulars are given of flexible stranded steel wire cable made to the special Royal Aircraft Factory specification No. 28a.

05 July 1916 - The Aeroplane : THE M.F.P. STEEL WARPLANE : The type B2 M.F.P. Military Steel Tractor Warplane, built by the Poison Ironworks, of Toronto, Canada, equipped with a 130 h.p. Hall-Scott motor, made a new record in demonstration tests before foreign Government officials at the Hempstead Aerodrome, near New York, on June 6th.

Tliis machine, which is the first all-Canadian war aeroplane, with fuel and oil for four hours' continuous flying, climbed one thousand feet in one minute and twenty seconds with this load, piloted by Mr. Niles.

The speed test was cut short, owing to magneto trouble, so that no official record could be obtained, but those who saw the flights expressed the opinion that the machine showed a speed of over eighty-five miles per hour.

The officials who watched the trials were : —

Captain H. Steensand, Chief Engineer, Royal Dutch Naval Flying Corps, and Lieut. Filbert Cantori, of the Italian Royal Navy.

16 July 1916 - The Aeroplane : the fleet of giant war aeroplanes, ordered by the British Government from the Curtiss Aeroplane Company, was destined to decide the campaign on the Western front." It is said that this statement was made on his arrival on the American liner "St. Paul" by George O. Robinson, who was alleged to belong to the Curtiss Company.

The "N.Y. Times" says ;—"He has been at Hendon, the Loudon aviation base, supervising the assembling of aeroplanes shipped from this country. The largest of these are the "Canada" and "super-Canada" types of machines now being built at Buffalo and Toronto."

26 July 1916 : The Aeroplane : G. B. CockBURN—Britam's only representative at the first Reims Meeting. • Devoted four years and persdhal fortune to flying experiments—six months of which was employed in teaching the first four officers to fly for the Admiralty on Mr. McClean's machines, as there were no naval pilots. Gave instruction free. Lived at Eastchurch at own expense. Has as yet received no thanks from the Lords Commissioners. Later accepted subordinate civilian post under R.F.C. in order to



## Notes on "Civil Aviation"



assist the, late Colonel Fulton, C.B., to form and build up the Aeronautical Inspection Department. Was, with Mr. McClean, the father of the Royal Naval Air Service.

Geoffrey de Havilland—pioneer pilot and designer ; experimented alone, designed, built, and flew his own aeroplane and engine in 1909. Subsequently, when employed by others, designed and flew many of the best aeroplanes ever produced in this or any other country.

Mrs. Hilda Hewlett—the first British woman pilot. Founded one of the first and most successful flying schools, and has since established a successful manufacturing concern.

J. A. D. McCurdy—Canadian pioneer. Flew in 1908 in America and Canada on machines largely of his own design and construction. Has flown regularly ever since, and has done valuable war work in training pilots and constructing aeroplanes.

H. P. Martin—devoted entire time and fortune from 1908 onwards to development of aeroplanes, in conjunction with Mr. Handasyde. Specialised on purity of workmanship and did much to raise the level of British aircraft construction.

J. T. C. Moore-Brabazon—devoted several years and his private fortune to experimenting with aeroplanes. Was the first aviator to fly a mile round a closed circuit on an all-British aeroplane.

Harold Perrin—first secretary of the Roy'al Aero Club. Organised, managed, directed, and generally inspired all rules and regulations concerning flying from its earliest days. Administered laws without fear or favour under very difficult circumstances, and acted generally as the "head-centre" of official aviation for many years. Has contributed valuable work to the regularising and governing of aviation.

Horace, Eustace, and Oswald Short—three brothers. Among the earliest experimenters and builders of modern balloons in Great Britain. Founded in 1909 the first factory built exclusively for aeroplane work in England. Have produced many notable types, including the first multiple-engined aeroplanes. Have led the world in the development of seaplanes.

F. SiGRiST—carried out all Mr. Sopwith's earliest experimental work as chief engineer. Later, as works manager to the Sopwith firm, became, jointly responsible for the development and design of the Sopwith machines.

09 August 1916 : A demonstration was arranged for Major-General Sir Sam Hughes, Canadian Minister of Militia, by Colonel Grant Morgan, Five types of machine were flown by English and Canadian, pilots. The Canadian pilots gave displays in which they proved their right to be considered equal to the best British pilots. Illustrations were given of fighting in the air, and some marvellous loops were made. Great satisfaction was expressed by Sir Sam Hughes and all those who witnessed the flights. Among those

## Notes on "Civil Aviation"

present were Mr. John Aird (Canadian Bank of Commerce), Colonel D. Armour, Mr. F. W. Ashe (Union Bank of Canada), Mr. G. McL. Brown (Canadian Pacific Railway), Colonel Bruce, Major C. Bryan, Mr. C. Gamble (Canadian Bank of Commerce), Commander Sir A.-Trevor Dawson, R.N., Major Garrett, Major-General Howard, Mr. H. H. Hambling, Sir William Peterson, Captain Plumer, Colonel Frank Reid, and Major-General Watson.

16 August 1916 : Three hundred young men (19 to 22) of good education, are required to train as wireless telegraphists for the R.F.C. Application should be made any morning to "the Polytechnic", Regent Street, London.

06 September 1916 : the aeroplane : According to the "Morning Albertan" of Calgary, a Canadian squadron of the Royal Flying Corps is now in action in France, where they have chiefly been doing good work. 100 men of all ranks are on active service, and a number are still in training.

\* \* \*

Miss Katherine Stinson, a well-known American aviatrix, was nearly killed on July 23rd during a flight between Camp Hughes, -Manitoba and Brandon. She made a bad landing after engine failure and smashed her machine, escaping with minor injuries.

October 5, 1916 : Despite civil air operations are banned, George Holt Thomas registers the airline, Aircraft Transport and Travel Ltd.

18 October 1916 - The Aeroplane : The Dominion Government is arranging for the establishment of an aviation school and aeroplane factory in Canada. This action is being taken with the approval and co-operation of the Imperial authorities, who will send a staff of competent men to take charge of the school. The aeroplane factory will be established under the direction of the Imperial Munitions Board, which has assured orders from the Imperial Government while the war continues.

A number of Canadians has already been trained in Canada and the United States by the Curtiss Co. and the Thomas Bros., though it is occasionally difficult to distinguish between these subjects of an effete monarchy and the free-born citizens of the States. Presumably a real Government School, under a real Munitions Board, will manage to bring the cost per pupil up to the necessary Government standard, even if it does not improve the quality of pilot evolved. The Canadians so far received have been rather good, on the average.

08 November 1916 : It is reported from Ottawa that there is no truth in the rumour that Canada is to have an Air Minister of her own. "One regrets it, for anything would be better than following England's example". - Ed. CGCG The Aeroplane.

Aug. 28th 1916 : The "Morning Albertan," of Calgary: Ottawa —Important developments are anticipated from conferences now being held with Hon. J. D. Hazen and members of the Naval Service Department, and Lord Innes Kerr representing the Admiralty. The conferences have to do with the aviation questions and Canada's participation in that branch of the Service. At the close of to-day's conference, the Minister stated that important matters were under consideration, but that nothing could yet be made public."

December 22, 1916

The New UK "Ministries and Secretaries Act" became law. Within this law it was stated that the President of the new Air Board 'shall be deemed to be a Minister appointed under this Act and the Air Board a Ministry established under this Act.

15 July 1916 : William E Boeing starts "Pacific Aero Products".

26 July 1916 : inquiring into the administration and command of the Royal Flying Corps : Colonel Beatty was called in reference to an allegation that Captain Picton Warlow was allowed, or ordered, to fly an old machine which had ceased to be of any value in France, back to England when the machine was in a dangerous condition to fly in.

Colonel Beatty said that he was present at R.F.C headquarters in France when the officer started for England. It was not a question of a man being allowed or ordered to fly back, it was a privilege.

The machine was a two-seater Bleriot with an 80 Gnome engine.

It was obsolete for use in the field, but by no means obsolete for training purposes.

The same type was, he believed, still in use.

He could not definitely recollect how long this actual machine had been in use.

To the best of his recollection it was almost new.

The type at that time was discarded because it could not climb to the height required with a military load.

If it was not a new machine, he could say quite definitely that it would have been overhauled.

## Notes on "Civil Aviation"

The day in question, December 20th, was a very good one, and he was told that England could be seen from the aerodrome. It was clear, but slightly cloudy, with some wind.

The machine was not used for field service, but was perfectly suitable for training purposes.

The journey on which Captain Warlow started should have occupied not more than 1 hour 20 minutes. If a machine got into the clouds for five or ten minutes the best pilot might miss his bearings ; or Channel mists might cause an accident.

The Chairman : When it was decided to discard types of machines which were outclassed by newer types, what was done with the discarded machines ?—A machine which could be of real use for training purposes, whenever possible, was flown to England. If a machine was fit to fly across, then the pilot who was coming across was allowed to fly it.

Q - The Chairman: Who decided as to the fitness of the machine ?

A - Colonel Beatty: The officer in charge of the repair section.

Q - The Chairman: Was a test flight made, or was the machine overhauled ?—

A - Colonel Beatty: Invariably it was tested to make certain that it would fly. Either the officer in charge of the repair section or the officer who was going to fly would test it.

Q - The Chairman: It would go into the repair shop first of all, and then be tested, and if it was found fit to fly, the officer whose turn it was to come to England might fly it over ?

A - Colonel Beatty: He would get permission to do so.

Q - The Chairman: explain how the accident happened,

A - Colonel Beatty: suggested that the officer might have got into a cloud and lost his bearings, and missed England altogether.

Q - General Sir H. Smith-Dorrien : Are there any other occasions on which men have lost their way similarly ?

A - Colonel Beatty: I know a man who lost his way in a bad snow storm - that in the early days of the war a pilot was lost in the same way.

The Chairman then read the proceeding of the Court of Inquiry with reference to the deaths of Captain Downer and Lieutenant

Burrows, who were killed whilst flying a B.E. 4 machine, and respecting whose death allegations that they were due to faulty design or that a bad repair had been made. The evidence given at the inquiry was that the machine was making an abnormally steep spiral descent when the strut broke.

A - Colonel Beatty: The R.a.f only tests the first machine of a type. The first machine of a type is put to very exhaustive tests. As the others came along they were roughly tested by pilots in the air.

Q - The Chairman: Have you special pilots for that duty ?

A - Colonel Beatty: Yes, specially for that work. Contractors were given certain formula to which machines must approximate. A certain climb, speed, and load was specified—a practice which had only been instituted during the last year.

Q - The Chairman: And you test the machines with reference to your specifications ?

A - Colonel Beatty: Yes.

Q - The Chairman: Do you find that the machines substantially comply with specifications ?

A - Colonel Beatty: Yes, very closely.

The Committee then sat in camera.

After the last private sitting on August 1st it was announced that the Report would be issued shortly

## Notes on "Civil Aviation"

1916 : RFC and RNAS accept Canadian Pilot volunteers after a medical check and dispatched to England to receive flight training (no requirement now for holding an Aero Club of America (ACA) certificate) See more at: <https://legionmagazine.com/en/2015/06/canadian-flyers-go-to-war/#sthash.Nujh0vay.dpuf>

1916 : Short Bros. build two airships using duralumin components. Oswald Short believes duralumin far superior than wood for aircraft construction. Oswald extensively tests various duralumin components with the intent of using duralumin for aircraft construction. Many wondered whether or not duralumin would resist corrosion. To prove the metal was up to the task, Oswald affixed duralumin and mild-steel plates to a jetty so that they were exposed at low tide and submerged in the sea at high tide. After nine months, the duralumin had only light surface corrosion, while the steel plates had nearly rusted away.

15 September 1916 : 400 aircraft of the RFC play a major role in the Somme offensive, attacking enemy trenches with machine-gun fire, and eventually winning air superiority over the battlefield. 10 per cent of the pilots engaged at the Somme were Canadians. : <https://legionmagazine.com/en/2005/01/fateful-decisions-on-the-somme/#sthash.4yUr2Xsf.dpuf> - See more at: <https://legionmagazine.com/en/2005/01/fateful-decisions-on-the-somme/#sthash.4yUr2Xsf.dpuf>.

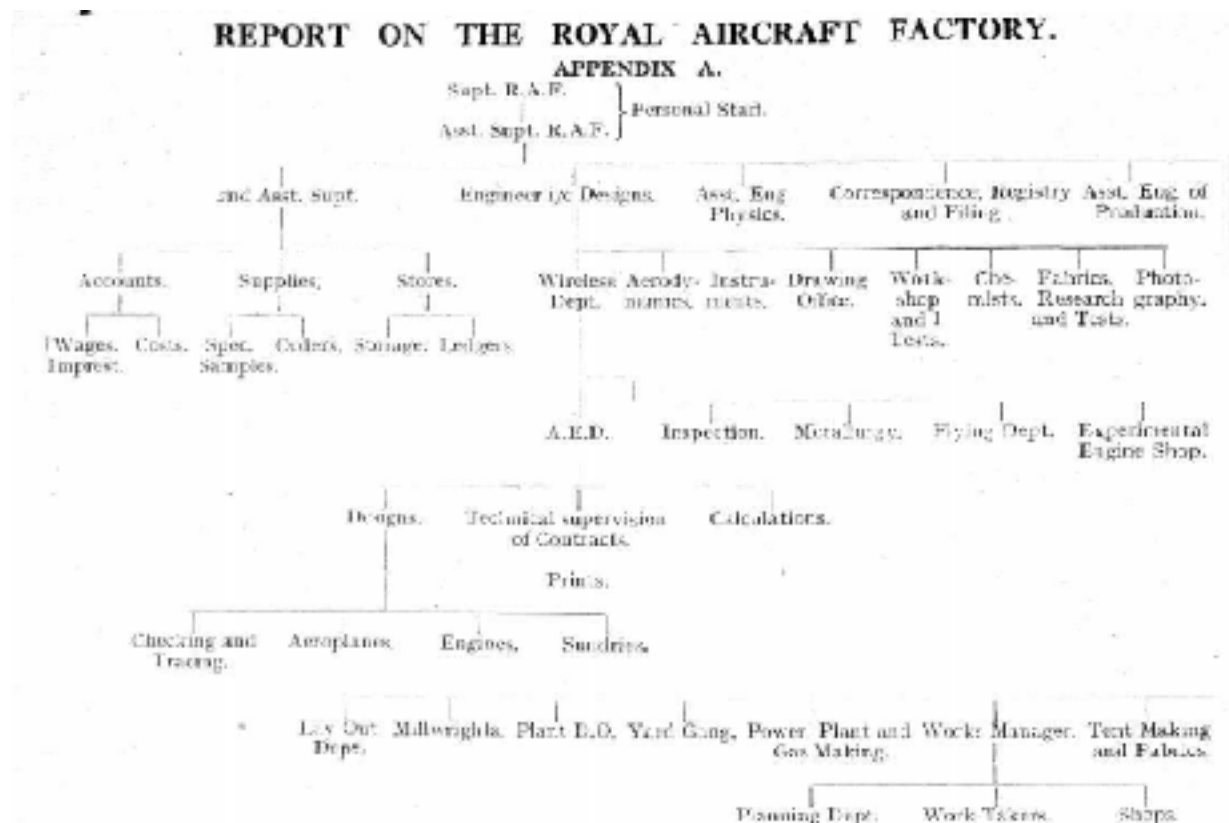
November 1916 : Deliveries of Handley Page 0/100 to RNAS begin.

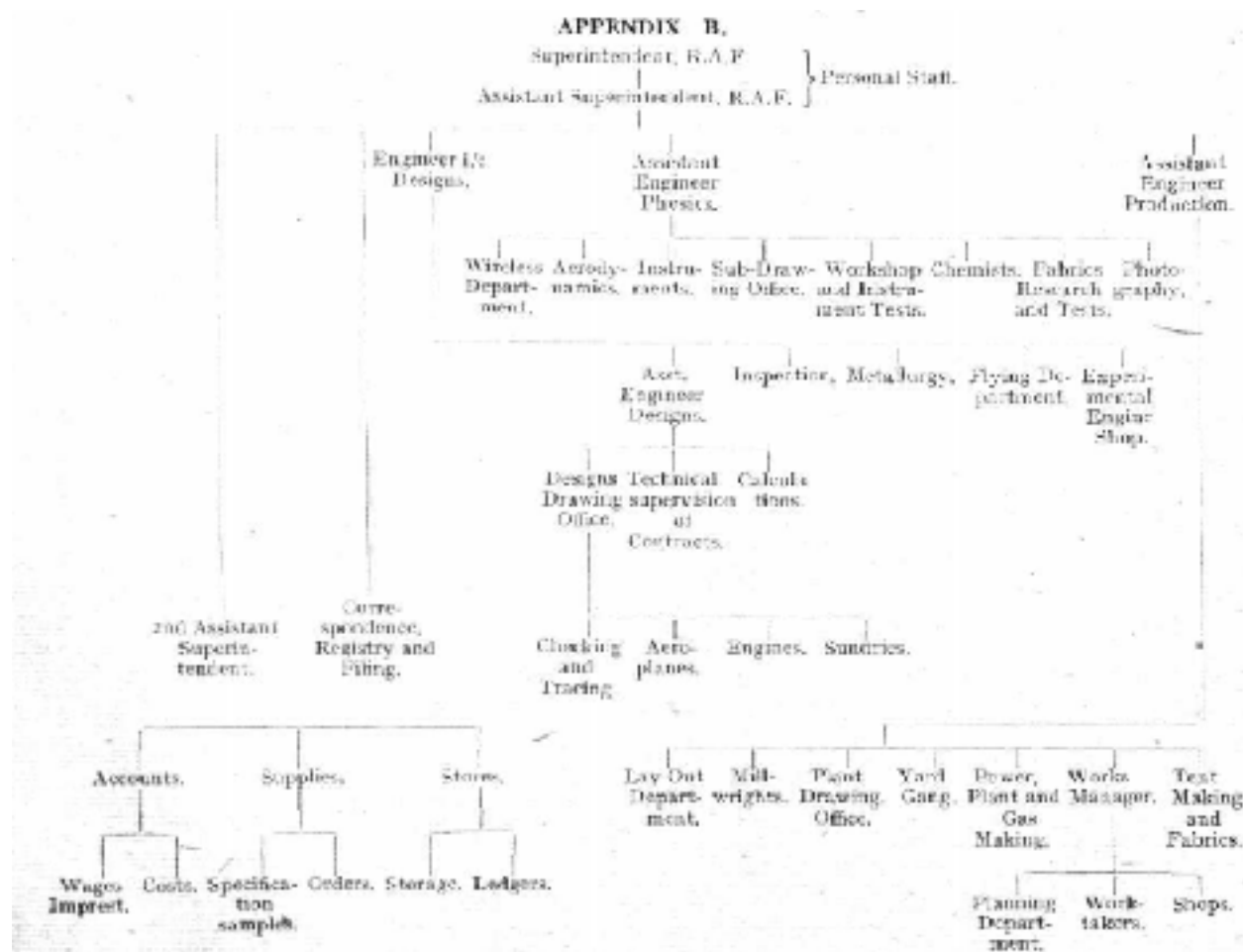
December 1916 : Imperial Munitions Board (IMB) Canada, mandated to provide buildings and equipment through an "aviation department". The result is the Crown Corporation "Canadian Aeroplanes Limited" headed by Frank Wilton Baillie, which purchases Curtiss Aeroplanes and Motors Limited in Toronto.

December 1916 : Handley Page 0/100 re-engined with R.R "Eagle" engines designated 0/400. Ultimately over 400 are built by the end of WW1, resulting in a massive shift of manufacturing methodologies for large scale production.

December 1916 : the Wright-Martin Company primarily interested in recovering the more than \$1,000,000 it had paid for the rights to the Wright brother's patent, notifies other aircraft manufacturers (US or international?) that they would have to pay a royalty of five percent on each aircraft sold, with a minimum annual royalty of \$10,000 per manufacturer. Wright-Martin demanded this royalty on all aircraft, whether they achieved differential lifting by the wing-warping technique of the Wrights or the far more popular ailerons employed by Curtiss.

End 1916 : Informal Canadian RFC Pilot recruits numbered about 350. See more at: <https://legionmagazine.com/en/2015/06/canadian-flyers-go-to-war/#sthash.Nujh0vay.dpuf>





During 1916 ever-increasing investigative work was being undertaken by the British Directorate of Military aeronautics - Dept. of Design - Safety Standards ( Technical Department) to identify the reasons behind the failures of aeroplane structures. Capt. A.P

## Notes on "Civil Aviation"

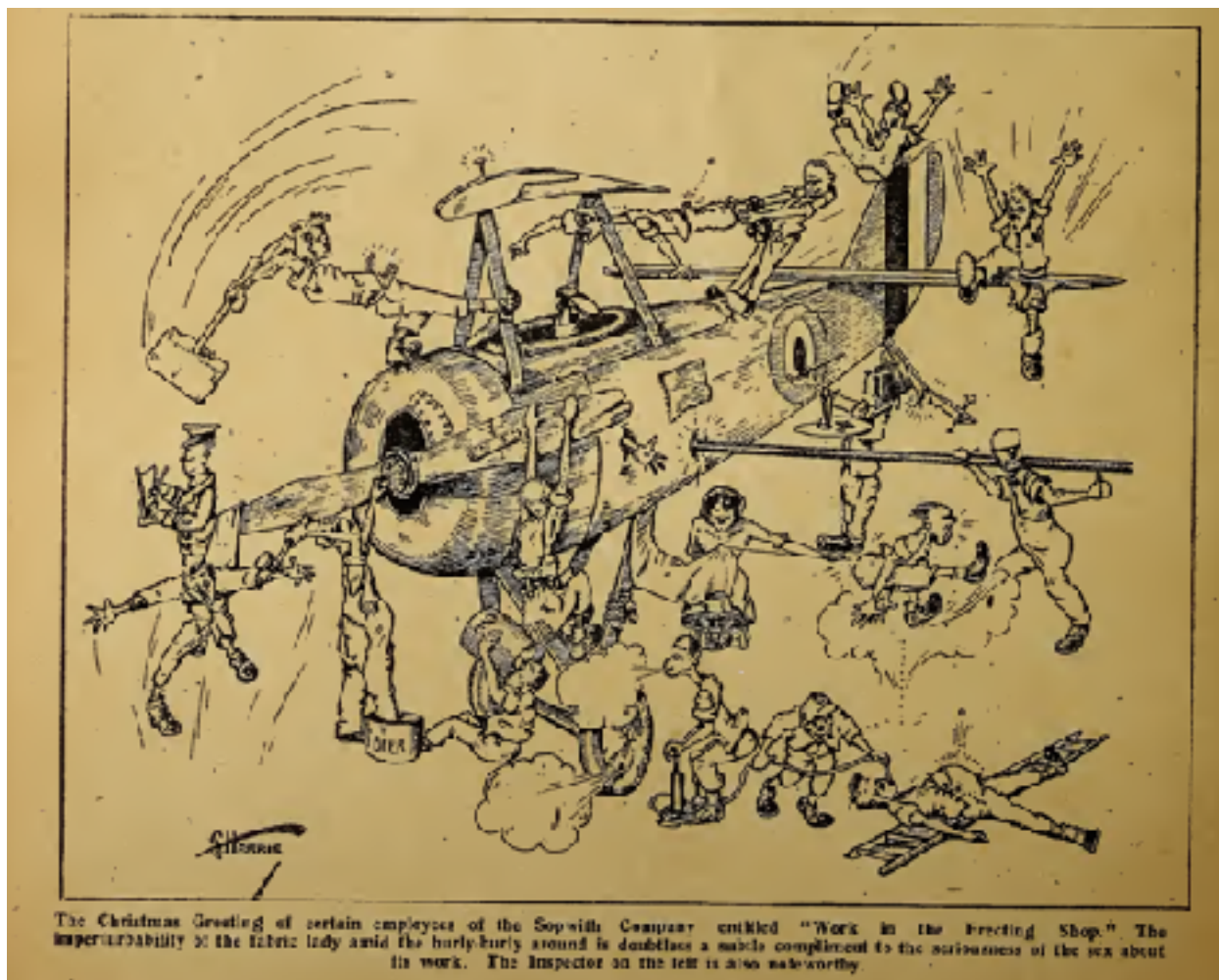
Thurston, in charge of "Technical Direction, RFC" <sup>79</sup> has been accomplishing static destructive testing of every aeroplane "Type" that the RFC has selected for "Operational Use" by the RFC.

Reports from at least a half-dozen Committee of Enquiry into B.E.2e aircraft accidents - usually while in a dive, where the wings had failed, determined that the wings had collapsed upwards and recommended that "tension wires" be added along the triangular pylon struts supporting the overhang landing wires.

Thru destructive testing of complete airframes in a test jig and analysis of the data obtained, Capt. Thurston identifies that instead of "Tension Failures", the B.E.2e's wing struts had failed in compression from negative air load applied during the dive. This leads to the "strength factors" required under "Down-Loads" to be re-considered.

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<sup>79</sup> Harald Penrose, British Aviation - The Great War and Armistice 1915 - 1919, Putnam & Co., London 1969. pg. 204 SBN 370-00128-1





CANADIAN AVIATION - 1917

January 1917 : it, was announced that the Canadian Aviation Association, under Col. .Hamilton Merritt, would conduct aviation schools in Canada.

03 January 1917 : many of the best officers at the Air Department going, on active service early in the war, and owing to the absolute necessity for increasing % the personnel of the R.N.A.S. as rapidly as possible, a "number of extremely undesirable persons" worked their way into the Service <sup>80</sup>, not merely in subordinate positions as R.N. and R.N.A.S officers at air stations, but also :

1. as R.N.V.R. officers,
2. attached to the R.N.A.S.,
3. in administrative positions at Whitehall,
4. in technical capacities at Whitehall, and
5. in factories. <sup>81</sup>



As a somewhat natural result, the originally "sound nucleus of officers" of the Royal Navy and of the Royal Regiment of Marines was simply swamped by "new-comers" of a singularly objectionable type, who would never have obtained commissions if the officers who selected the candidates before the war had still been so employed. A craving for cheap advertisement and an atmosphere of intrigue arose.

The R.N.A.S. people at home earned a very bad reputation, both for their behaviour in public and for their lack of use in the war. Some detachments abroad were unduly prominent in the Press, as they were less reticent about their doings than were R.F.C. officers.

And while all this was going on, the officers and men who were labouring silently and earnestly to help in the war, went unknown. <sup>82</sup>

In fact, the officers and men who were labouring silently and earnestly were unknown to such an extent that the so-called "technical people", . naval and civilian, at home, busy with their own intrigues, seem to have forgotten their existence and neglected their needs and their demands for aircraft and engines, and, further, seem to have forgotten that the man on active service knows what he needs very much better than does the man in a chair in Whitehall, who never goes to see the war at close quarters, and who takes excellent care hardly ever to ascend in an aeroplane even over a perfectly good aerodrome at home.

#### British and Colonial.

Fortunately, a number of extraordinarily gallant young men, British and Colonial, also managed to obtain commissions, and, despite their lack of proper training at first, their lack of proper machines to fly, and the lack of a proper policy of warlike operations at Whitehall, and sometimes despite lack of common intelligence on the part of their commanding officers, these youngsters did work in the air which has been worthy of the proudest traditions of the King's Services.

Be it said, however, that since Commander Godfrey Paine left the R.F.C's Central Flying School to devote himself entirely to the training and discipline of Naval aviators there has been "a notable improvement in the general training" and the deportment of the new generation of R.N.A.S. officers.<sup>83</sup>

<sup>80</sup> The Aeroplane 03 January 1917 pg 22. AN APPRECIATION OF THE WORK OF THE ROYAL NAVAL AIR SERVICE.

<sup>81</sup> The Aeroplane 03 January 1917 pg 22. AN APPRECIATION OF THE WORK OF THE ROYAL NAVAL AIR SERVICE.

<sup>82</sup> The Aeroplane 03 January 1917 pg 22. AN APPRECIATION OF THE WORK OF THE ROYAL NAVAL AIR SERVICE.

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## Notes on "Civil Aviation"

As a rule, both in Great Britain and in Germany the highest technical schools have developed from schools of the secondary order, although the latter are not regarded as preparatory to the former.<sup>84</sup>

In England provision for the higher orders of technical education has been made in the ancient universities and in technical schools or colleges that have developed up to the university standard.

In the older universities, the technical side is an outcome of provision for scientific research.<sup>85</sup>

The establishment of university colleges in, the great centers of industry and population, and their gradual elevation to the university plane is the most notable event in the history of higher education in England during the last half century.

These institutions were intended to meet local demands, and they all make provision for the various branches of engineering, technology, and agriculture, with the purpose of supplying experts for the conduct of industrial enterprises. Until 1907 the City and Guilds (Engineering) College was entirely independent, was known by the name of the "Central Technical College," and belonged to the City and Guilds of London Institute, by whom its affairs were managed. The City and Guilds (Engineering) College still belongs to the institute, which, instead of managing through a committee of its own, has delegated its powers to what is known as the delegacy of the City and Guilds (Engineering) College.

This delegacy, which was appointed at the time of the federation, consists of eight representatives of the City and Guilds College, eight from the governing body of the Imperial College of Science and Technology, and three representatives from the Goldsmiths' Co.

All the affairs of the college are managed by this delegacy, to whom the entire staff (teaching and otherwise) are responsible. The chairman of the delegacy is Sir John Wolfe Barry, K. C. B., F. R. S., and the dean of the City and Guilds College is Prof. W. E. Dalby, F. R. S.

When the federation was brought into existence, the needs of the engineering college were especially considered, and an extension has been built which has practically doubled its capacity. This extension was erected by funds generously provided by the Goldsmiths' Co. ^ Entrance requirements.—The entrance requirements of the separate colleges are determined according to their individual scope and the interests or purposes of candidates for admission. They are all, however, marked by the same liberal spirit. In general, the colleges receive young men, not under 17 years of age, who have had a good secondary education, and excuse them from the first, second, or third year course according to the standard which they have attained when they present themselves. The decision in this respect is made by the professors particularly concerned.

The conditions for the admission of research students are as follows : A candidate desirous of undertaking original research must have completed an associateship course in one of the departments of the Imperial College, viz, the Royal College of Science, the Royal School of Mines, or the City and Guilds (Engineering) College, or an equivalent course of study elsewhere, and must satisfy the rector and professors as to his qualifications for extended study.

The subject of research will require the approval of the professor of the department in which it is to be carried out. The absence of uniform, rigid entrance requirements accords with the conduct of studies within the federated colleges. The purpose has been to keep them free from academic traditions and the restrictions of fixed syllabi. The general system of classification makes adequate provision for students of different degrees of advancement and having different ends in view. The charter of the Imperial College provided for the coordination of its work with that of the University of London, and in 1908 the college was admitted as a school of the university in the faculties of science and engineering. The ultimate relation of the two great institutions became, therefore, a matter of consideration on the part of the royal commission on university education in London, appointed in 1910.

The opinion was strongly expressed by the commission that, by closer relations with the University of London, the standard of admission to the Imperial College would be raised and thus the college would make a substantial gain. In response to this suggestion it was explained that a movement had already begun on the part of committees of the governing body of the Imperial College to effect this change.

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<sup>84</sup> Anna Tolman Smith, SPECIAUST IN FOREIGN EDUCATIONAL SYSTEMS : HIGHER TECHNICAL EDUCATION IN FOREIGN COUNTRIES - STANDARDS AND SCOPE. U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF EDUCATION BULLETIN. 1917, No. 11

<sup>85</sup> Anna Tolman Smith, SPECIAUST IN FOREIGN EDUCATIONAL SYSTEMS : HIGHER TECHNICAL EDUCATION IN FOREIGN COUNTRIES - STANDARDS AND SCOPE. U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF EDUCATION BULLETIN. 1917, No. 11 pg 39

## Notes on "Civil Aviation"

It has even been proposed that the first two years' courses in the college of mining and the college of science should be abandoned. Advanced standards have already been secured in the case of the engineering college, to which students are now admitted by competitive examination. This does not preclude varied degrees of previous attainment, but it insures the choice of the most promising in each particular line of study, a measure necessitated by the excess of applicants for admission.

Examinations are held at the end of each course of instruction and at such other periods as may be deemed necessary.

Diplomas.—The following diplomas are awarded to students who satisfactorily complete the appropriate organized course of study and pass the necessary examinations:

- (a) The Diploma of Membership of the Imperial College of Science and Technology (D. I. C.).
- (5) The Diploma of Associateship of the Royal College of Science (A. R. C. S.).
- (c) The Diploma of Associateship of the Royal School of Mines (A. R. S. M.).
- (d) The Diploma of Associateship of the City and Guilds of London Institute (A. C. G. I.).

Courses of instruction.—The courses of instruction fall mainly under the following heads:

- (1) Diploma Courses. Organized courses of instruction extending over three or four years leading to the diplomas of associateship of the Royal College of Science, the Royal School of Mines, and the City and Guilds of London Institute.
- (2) Special or Partial Courses. Short courses of lectures, with or without laboratory work, of an advanced character dealing with special branches of pure and applied science suitable for those who have graduated or are already engaged in some scientific industrial occupation.
- (3) Advanced Specialized Courses. Research work and specially arranged courses of study in advanced science or technology extending over one or more complete years leading to the diploma of the Imperial College.

The scope of each one of the federated colleges is outlined in the calendar as follows:

Royal College of Science affords complete courses of training, extending over three years, in mathematics, mechanics, physics, chemistry, botany (including the first portions of the Imperial College diploma courses in plant physiology and pathology, and the technology of woods and fibers), zoology, and geology, which may be regarded as complete in themselves or as preliminary to more advanced work in the applications of the subjects in question to industrial problems.

The Imperial College—Royal School of Mines affords complete specialized courses of training, extending over four years, designed adequately to equip a student who desires to follow the profession of a mining, a metallurgical, or an oil engineer.

The Imperial College—City and Guilds (Engineering) College affords complete courses of training, extending over three years, in engineering, arranged to suit the requirements of those preparing for engineering as a profession, or who desire to acquaint themselves with the scientific principles underlying any particular branch of engineering.

In addition, the Imperial College offers special facilities for work of a more advanced character in all the branches of science previously referred to. The advanced student may engage in research work, or attend full-time organized courses of a more advanced character than those forming the normal courses of the three institutions which are integral parts of the Imperial College, or he may attend the college as a part-time student for the purpose of taking up one of the special lecture courses, with or without laboratory work, or a specially arranged course of study whether in pure science or in the application of science to industry.

Such courses include (a) Railway engineering, (b) Structural engineering, (c) Hydraulic engineering, (d) Surveying and geology, (e) Electrical machinery and transformers, (f) Design and erection of chemical plant, (g) Fuel and refractory materials, (h) Technology of woods and fibers, (i) Economic botany, (j) Plant physiology and pathology, (k) Biochemistry, (l) Economic entomology, (m) Comparative pathology, etc.

Equipment for practical work.—The equipment of the department of municipal and sanitary engineering comprises a commodious drawing office, laboratory, and lecture room, and a well-arranged and fully-equipped sanitary engineers' workshop, provided with

modern appliances."

### MANCHESTER MUNICIPAL SCHOOL OF TECHNOLOGY.

Stages of development—The Manchester Municipal School of Technology, developed from the Mechanics Institution founded in that city in 1824, is of university rank and at present recognized as one of the leading technical schools of the world. The course of this development is typical of what has taken place in the case of several other similar institutions in Great Britain. Established as a Mechanics Institution, it occupied for over 13 years the first building expressly designed for such an institution. In 1857 it was removed to larger premises, which were secured mainly by popular subscriptions. In 1852 the institution received contributions toward its maintenance from the City and Guilds of London Institute, which was organized to promote technical education throughout the Kingdom. At the same time the local contributions to the Manchester Institute were greatly increased, and the name was changed to Manchester Technical School. In 1887 this school became a beneficiary under the terms of the will of Sir Joseph Whitworth, who left some £300,000 (\$1,600,000) to legatees for the promotion of technical and art instruction. It was proposed to devote this fund to an institution that should include a technical school, a school of art, and a museum, and to bear the name of Whitworth Institute. Arrangements were made with the governors of the technical school for the consummation of this purpose, which was furthered by the donation of the profits accruing from the Manchester Jubilee Exhibition.

Meanwhile, by the passage of the technical instruction acts of 1889 and 1900, the Manchester city council was empowered to aid technical education out of the rates (property tax), and for this purpose additional taxes amounting to £15,000 a year were also placed at its disposal. In view of the enormous increase of the funds which the city council was prepared to devote to the technical school, it was decided that the council should have full control of the institution. This decision was concurred in by the governors of the Whitworth Institute, and in March, 1892, the technical school, with all its properties, including a large estate that had been offered as a site by the legatees of Sir Joseph Whitworth, was transferred to the municipal corporation. As a consequence of this transfer the school assumed the title of the Municipal School of Technology and entered upon a period of rapid expansion.

In 1905 the school of technology was associated with the University of Manchester, which established a faculty of technology and recognized the principal of the school as dean and the heads of the several departments as professors of the university. Present status.—

In 1912 the school of technology was officially recognized as a college of university rank and included among the higher institutions in Great Britain which received grants from the board of education. The site, buildings, and equipment of the school of technology are now valued at £3,500,000. The annual cost of maintaining the school is approximately £50,000.

Since ascending to the university plane, the teaching and research work of the school of technology have been brought into closer relation with the industries of the district; and the demand for graduates exceeds the supply and is constantly growing.

Organization of courses.—The work of this municipal institution is organized in the interests of three classes of students: Those who wish to complete a full course of technical training, leading to the degree of bachelor of scientific technology; students who contemplate a more

## Notes on "Civil Aviation"

limited course of training; and graduate students either from the Manchester school or from universities. Students entering for the degree courses are required to pass the matriculation examination and a second test, the intermediate examination, which may be deferred until at least a year before entering for the diploma examination.

Certificate courses are also provided for students, which do not require the same entrance examination as the degree courses.

Degree courses.—The division of the Manchester School of Technology which is comparable with the higher technical schools previously considered is comprised in the degree courses. Candidates for admission to this division must pass the matriculation examination which covers the following subjects

:

English language and literature, English history, mathematics, and three of the following subjects, one of which must be a language, Greek, Latin, French, German, some other language approved by the board, either mechanics or physics, chemistry, geography (physical, political, and commercial), either natural history (plants and animals) or botany.

Credit is also given for alternative papers of a higher standard which are taken according to specified conditions.

The degree courses extend over three years from matriculation, and lead to the degree of bachelor of technical science (B. So. Tech.).

The subjects of these courses are:

Mechanical engineering.

Electrical engineering.

Sanitary engineering.

Applied chemistry:

(a) General chemical technology'.

(b) Chemistry of textiles (bleaching, dyeing, printing, and finishing).

(c) Paper manufacture.

(d) Metallurgy and assaying.

(e) Chemical technology of brewing.

(f) Electrochemistry

Textile industries.

Architecture.

Printing and photographic technology. In the conduct of the degree courses, great importance is attached to the practical exercises. In the case of mechanical engineering, which is taken as typical, the relative proportion of time assigned to theoretical and practical instruction is shown in the following table and diagram:

04 January 1917 : S.E 5 prototype (A. 4562) flown to Farnborough from St. Omer with various incorporated modifications made during field trials with 60 Sqn RFC (Neuports) by Lt. Roderic M. Hill and Lt. F.H.B. Selous.

28 January 1917 : Maj. Frank Godden (designer of the SE5) departs Farnborough in A4562.

8 minutes later the aircraft suffers a structural failure at 1000 ft. Godden is killed.

A4562 had accumulated only 20 hrs of flight time.

"Eye witnesses" reported that the aircraft was looping when "the inter-plane struts fell from one side of the aircraft".

The Board of Inquiry set up by the R.a.f determined

1. "the propeller had failed" and that

2. "the resulting out of balance forces caused the wings to collapse".

Their final verdict? Godden's death was an "accident".

Capt. A.P Thurston (Directorate of Military aeronautics - Dept. of Design, safety standards) in charge of "technical Direction, RFC" ordered the wreckage of A4562 placed under guard at the crash site for investigation and the area searched for recovery of all pieces of the aircraft. Eventually, the pieces of the propeller are found and put back together.

## Notes on "Civil Aviation"

From his examination of the wreckage, Thurston:

1. determines that the failure of the wing was not due to the propeller.
2. identifies that a spar in one of the lower wings had failed during the application of downward torsion due to a reversal of the "Normal loads" experienced by the wing during flight.

A reversal of the "Normal loads" on the wing happens during inverted flight. However, the design of the wing of the prototype S.E 5 *should have* precluded this, *unless something else had come loose inside the wing prior to the failure of the spar*. Thurston then inspects the second S.E.5 prototype, which had accumulated only 9 hrs airtime. His inspection, by giving the bottom wing "a good bang", revealed that the drag and anti-drag braces were slack and upon cutting the fabric free of the wing, he found that the "Strengthened" compression ribs were cracked.

During inverted flight the resulting load applied to the wings caused the "Strengthened" compression ribs to distort under torsion - allowing the pins holding the inter-plane struts to the spars to fall out.. The "Strengthened Ribs" design was like a "like a box without a bottom". The solution Thurston applied was simple: Join each of the 2 pairs of "Strengthened Ribs" together with an upper and lower skin of 3-ply from the fwd to the rear spar to make the box whole and take the torsion load. <sup>86</sup>

The Directorate of Military aeronautics - Dept. of Design - safety standards has been accomplishing static destructive testing of every aeroplane "Type" that the RFC has selected for "Operational Use".

Reports from every Committee of Enquiry into aircraft accidents pertaining to mechanical failures have been meticulously studied.

Thurston finds that the conclusions of the Board of Inquiry Committees are frequently not justified - owing to "Technical mis-apprehension" (Board of Inquiry Committees are frequently comprised of pilots, not thoroughly trained and qualified Engineers) <sup>87</sup>

1917 : UK : Construction commenced on new Aircraft Repair Depots (ARDs) sites that were established close to an existing railway network and from this extensive railway sidings were created serving large salvage and storage sheds.

15 July 1917 : Flight Sub Lieutenant Frank Bray of the Royal Naval Air Service, 8 (Naval) Squadron who lost his life 100 years ago today **aged 18**. He was the son of Marion I. Bray, of Hambleton House, Roundhay Park Lane, Moortown, Leeds, and the late John William Bray. He went missing in France and is commemorated on the Arras Flying Services Memorial

December 1917 : The RFC has 18,000 "Air Officers"

26 January 1917 : Canadian Aeroplanes Limited starts building factory on six acres, Dufferin Street, in Toronto's west-end industrial district. Curtiss JN-4, manufactured by Canadian Aeroplanes Ltd of Toronto, holds a special place in Canadian aviation history. It was put in large scale production for use in the training program newly established by the Royal Flying Corps (Canada) in 1917. The Canuck was a modified version of the American Curtiss JN-3.

26 January 1917 : The Aeroplane Weekly : The "Canadian Gazette" London (England, not London, Ont.) "Lieut. -Col. Hoare, an Imperial officer, is leaving for Canada to assume the post of Commandant of the new Imperial Flying School now about to be established there.

The British Treasury have sanctioned the establishment of 20 reserve squadrons in the Dominion.

Lieut.- Col, Rees was to be in command, but He is unwell.

Capt. Innes-Kerr, who is now in Canada, will be second in command, and 11 other officers of flying and constructional experience are being sent forward in the near future.

There will also, of course, be scope as officers for Canadians who have shown their capacity in the same sphere of work. "The establishment in Canada of this Imperial school cannot fail to give a great stimulus to aviation in the Dominion, and may well lead to the establishment of an important Canadian industry.

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<sup>86</sup> Harald Penrose, British Aviation - The Great War and Armistice 1915 - 1919, Putnam & Co., London 1969. pg. 204 SBN 370-00128-1

<sup>87</sup> Harald Penrose, British Aviation - The Great War and Armistice 1915 - 1919, Putnam & Co., London 1969. pg. 204 SBN 370-00128-1

## Notes on "Civil Aviation"

Young Canadians have in the present war shown just those capacities and qualities of daring which make the successful flying man. Sir David Henderson, the head and genius of the R.F.C., has testified to the excellence of the work of the Canadians in that Corps ; they are, he declares, 'in every way a credit to the Dominion' and official records have borne similar witness from time to time. There is a large number of Canadians in the R.F.C. Canadians are also to be found in the R.N.A.S., and many of those known as British officers in both Services are of Canadian birth.

"Upon the development of this popular Service much of our future success on the Western and other fronts most certainly depends, and by instituting this Imperial Flying School in Canada the British Government gives a new encouragement to Canadian enlistment.

The greatest advantage is anticipated from training in Canada, where the atmospheric conditions are well suited to the first stages of learning, and where, of course, there is illimitable space for developments which are less attainable in the more crowded centres of this country. The final stages of training will, of necessity, be reserved for this side of the Atlantic."



January 1917 : England : The Aircraft SUPPLIES co. Ltd. ("A.S.C.O." STANDARD PARTS) publishes AN IMPORTANT WORK OF REFERENCE FOR THE AIRCRAFT INDUSTRY AND THE AIR SERVICES.

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SPECIFICATIONS, FITS and LIMITS, complete DIMENSIONS and R.A.F. MATERIAL specifications of all mark numbers are also given.

No more applications for copies of the A.G.S. Book can be dealt with at present, EXCEPT from Aircraft Manufacturers, Commanding Officers, and Chief Stores Officers at Service Aerodromes, as the whole of the first edition has now been applied for and reserved.

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- xii. FITTINGS: Propellers, Seats, Wheels, Tyres and Tubes. Controls, Petrol and Oil Tanks, Switches, Taps, Copper Tube and Connections, etc.
- xiii. ENGINE FITTINGS: Washers, Ball Bearings, Magnetos and Magneto Parts, Accumulators, Sparking Plugs.
- xiv. EQUIPMENT: Instruments and Indicators, Safety Belts, etc., etc.
- xv. COMPLETE UNITS: We are now in a position to undertake contracts for complete units (for all type of Aircraft), including Landing Chassis. Pulleys, Main Planes, Tail Planes, Rudders and Elevators.
- xvi. COLLAPSIBLE HANGARS: Timber and Metal Fittings for Bessoneau and other types.
- xvii. FACTORY AND WORKS EQUIPMENT: we are shortly opening a department to deal with the supply of Machine Tools (Metal and Wood), Electric Motors and Fans. Tools of all descriptions. Steel Stock Bins, etc.

### CONTENTS.

1. Chart of A.G.S. covering extracts from blueprints
2. Chart of R.a.f wires covering extracts from blueprints
3. Chart of Tie Rods and Joints covering extracts from blueprints
4. Chart of Nuts, Bolts, etc. covering extracts from blueprints
5. Metric Equivalent Charts
6. Numerical List of A.G.S. Part.
7. Alphabetical List of A.G.S. Parts
8. A.G.S and other Screw Thread Systems
9. A. G. S. Standards for Bolt Heads and Nuts
10. Photographs, Drawings and Dimensions of all important AGS Parts
11. A.G.S. Fits and Limits
12. R.a.f. Material Specifications
13. Test Pieces
14. Articles on "Standardisation" of Aircraft Parts 'and "Accelerating Aircraft Output"
15. Chart of Admiralty Strainers
16. Illustrations of R.A.F. and other Aircraft Parts, &c., &c , &c.

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**EXCEPT from Aircraft Manufacturers, Commanding Officers, and Chief Stores Officers at Service Aerodromes, no more applications for copies of the A.G.S. Book can be dealt with at present. The whole of the first edition has now been applied for and reserved. An announcement regarding a further edition will be made shortly.**

**OUR Policy is the STANDARDISATION OF AIRCRAFT SUPPLIES AND PARTS to ensure the "SPEEDING UP" of the production of Aircraft for War purposes.**



8 February 1917 : Kaiser Wilhelm announces unrestricted submarine warfare within specified blockade zones. U.S President Wilson severs diplomatic relations with Germany.

Feb. 10, 1917, the Honourable J.D. Hazen, Minister of the Naval Service, had raised the issue of a possible naval air service for "the adequate defence of the Atlantic coast of Canada." The Cabinet turned it down in March because of costs - See more at: <https://legionmagazine.com/en/2016/02/the-first-air-war-at-sea/#sthash.af5DtQi1.dpuf>.

The general outlines of such defences are later laid down by April 1918; the first air station sites had been selected at Dartmouth and Sydney in Nova Scotia - See more at: <https://legionmagazine.com/en/2016/02/the-first-air-war-at-sea/#sthash.af5DtQi1.dpuf>

17 February 1917 : 3rd voyage French liner S.S Athos enroute Yokohama to Marseille with 1,950 passengers and crew, 543 Chinese labourers headed for the battlefields of France as troops, a large contingent of Senegalese Tirailleurs, civilian passengers including



## Notes on "Civil Aviation"

women and children, mail & general cargo. torpedoed and sunk 200 miles southeast Malta by Capt. Hermann von FischeI : U-65 : Athos sank in 14 minutes taking 754 people, including all 543 Chinese, the captain and 11 crew members to the bottom.

21 February 1917 : The Aeroplane Pg 529 : ANSWERS TO CORRESPONDENTS.

1. **If you want any information about joining the R.F.C.**, write to the Director of Military Aeronautics, Adastral House, Blackfriars, E.C.
2. **If you want any information about joining the R.N.A.S.**, write to the Air Department, The Admiralty, Whitehall, S.W.
3. **Men in the Army, and ratings in the Navy** can only obtain commissions in their own branches or transfers to other branches by permission of their immediate commanding officers, who must forward those applications through the proper official channels.
4. **Applicants for commissions in the R.F.C** enter through the Cadet Wings, and are trained to fly at the Government's expense. This includes Civilians.
5. **Applicants for commissions in the R.N.A.S.** enter as Probationary Flight Officers, and are trained at Government expense. This includes Civilians.
6. **If you are blind or partially blind, or have to wear glasses** for any serious reason, you cannot become a Naval or Military aviator unless you have some very special qualification.
7. **If you have had special technical training**, are over 35 years of age, and attain *the necessary social standard*, which is not high, you may with luck become a Stores Officer R.N.A.S., or an Equipment Officer R.F.C., even if your sight is defective and you are physically deficient in other respects.
8. **Information concerning appointments as viewers or examiners or inspectors** in the Aeronautical Inspections Department (A.I.D.) may be obtained from the Chief Inspector, A.I.D., Adastral House, Blackfriars, E.C.
9. Observation of the points indicated above will save a great deal of unnecessary correspondence at the Admiralty, at Adastral House, and at this office, as there is no need to write letters on any point already explained above. The Editor is always pleased to answer questions or explain any points not understood by readers, but space in The Aeroplane is valuable, and the same question cannot be answered over and over again week after week. Consequently readers are requested to make quite sure that their questions have not been answered a week or so before.
10. To: E.K. (Eastbourne).
  1. Stores Officers, R.N.A.S., are practically the same thing as Equipment Officers of R.F.C. (vide The Aeroplane any time during the last month or two).
  2. Numerous ratings in the R.N.A.S. have received commissioned rank, presumably on the assumption that the man who enlisted in the R.N.A.S. early in the war is of a class somewhat superior to the ordinary Naval rating of the pre-war type. This fact naturally makes it more difficult for permanent service men, who are regular Naval ratings, to obtain commissions, but a man who has enlisted for permanent service in the R.N.A.S. since the war should have no particular difficulty in obtaining a commission if he happens to be on good terms with his immediate commanding officer.
11. To : L.L.G. (S.A.P., B.E.F.)
  1. 1st, 2nd, and 3rd Class Engineering Officers (E.Os.), R.F.C., rank accordingly as Captains, Lieutenants, and Second Lieutenants, and draw R.F.C. pay minus flying pay.
  2. A 3rd Class E.O. draws about 12s. a day.
  3. An officer transferring from the A.S.C. would, of course, draw E.O.'s pay.
  4. There is in the Army some small extra pay for interpreters, but this does not apply to every officer who happens to speak a foreign language. It is necessary to pass an examination in order to 'acquire the said extra pay.
12. To: H.H. (Ashford)
  1. Compressed air engines are rather outside the scope of this paper, but doubtless if you write to the Secretary, the Institution of Mechanical Engineers, Great St. George Street, S.W., he would be able to inform you as to the standard works dealing with this species of power plant.
13. To: D. (Willesden Green)
  1. There is provision in the R.F.C for *Boy Learners* aged from 17 to 19. *They are trained as Air Mechanics*, and, eventually transferred to that rank, *which is the equivalent to private in the Army*.
  2. If your son is old enough, the best thing he can do is to go down to the R.F.C Recruiting Depot at Farnborough and make a personal application.
  3. He will have to be prepared to sign on for 4 years and to stop there on the day of his application if necessary.

## Notes on "Civil Aviation"

4. If you wish your son to receive a commission in the R.F.C he will have to wait until he is 18, when he apply for a cadet-ship in the R.F.C

March 1917 : The United States of America declares war on Germany. Britain and France submit an immediate request for an "air armada" of 20,000 airplanes and 30,000 engines. <sup>88</sup>

14 March 1917 : Due sinking of the S.S Athos, the Chinese government breaks off diplomatic relations with Germany.

Between March and May 1917 : RFC lose 1270 aeroplanes. number of pilots killed outpaces those who replace them.

mid-March 1917 : At the beginning of this month (on the day before Graves's death, to be exact) William Avery "Billy" Bishop joins 60 Sqn. Bishop is the son of a well-known family in Montreal, he had passed through the Royal Military College and had joined the Canadian Cavalry, coming over with his regiment with the first Canadian contingent. applied to join the Flying Corps soon after arriving in blighty., posted as an observer to No. 7 Squadron. After a tour of duty in France as an observer he went home to learn to fly, and was posted to 60 Sqn almost as soon as he had got his wings.

On the occasion in which Bishop got his first Hun:

his engine subsequently failed, forcing him to land very near the front-line trenches. only just succeeding in scraping over the line.. The failure of the engine was due to Bishop's allowing the engine to choke while diving - fouling the plugs.

Having landed in an "unhealthy spot", Bishop got rapidly into a dugout occupied by some field gunners, and, with their help, moved his machine every half- hour to prevent the German artillery shelling it.

During the night Bishop borrowed a toothbrush from the gunner officer, and with this contrived to clean the sparking plugs of his engine. Having heard nothing of him, 60 squadron already having reported him missing, he then succeeded in getting a telephone message through to say that he was safe.

"Only those who know how irritating a thing an aero engine can be when you are in a hurry to start can appreciate the high standard of efficiency attained by RFC mechanics...[..]"

Shortly thereafter Bishop's return, the sergeants gave a musical evening to which the officers were invited, and it was here observed that one of the very few toasts which were proposed by the squadrons' sergeants - quick to recognise Bishop's quality - was that of Bishop's health (although he had only destroyed one enemy machine). None of his fellow-officers had, as yet, any idea of the brilliant career that was in store for him.

The chief

difficulty was that one could not ask pilots and mechanics to work all night as well as all day.

"ack-emma's = RC Pilot slang for A-M's" Air Mechanics (A.M's) — [for winging like old wives no doubt?]

March 1917 : the UK Air Board formed. The AID becomes part of the Ministry of Munitions (supply departments of the Admiralty and War Office are now combined). AID mandated with inspection of all Naval aircraft and engine contracts (previously the Admiralty did it's own aeronautical inspection) as a result, new A.I.D departments were formed:

1. "Seaplanes" a special branch headed by a Chief Inspector
  1. inspection of all Naval aircraft built by / received from contractors
  2. inspection of all Naval engines built by / received from contractors
2. "Acceptance Parks and Depots"
  1. acceptance and testing of aerodromes (airfields)
  2. acceptance and final testing of complete aircraft.

From infancy at the start of the War, the British aircraft industry grew to deliver hundreds of aircraft and thousands of components a month.

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<sup>88</sup> ENGINEER IN CHARGE - A History of the Langley Aeronautical Laboratory, 1917-1958 by James R. Hansen pg 16 - National Aeronautics and Space Administration, Washington, DC - Scientific and Technical Information Office, 1987

## Notes on "Civil Aviation"

- A. Now impossible for AID to continue a "full inspection" system with their own staff.
- B. AID begins system of "selective inspection".
  - 1. Manufacturer's / supplier's own inspection staff are trained and qualified to view / inspect 100% of the manufacturer's / supplier's product,
  - 2. Only a proportion of the Manufacturer's / supplier's product is re-examined by AID Inspectors.
  - 3. A.I.D Inspectors' visits became advisory sessions - firms new to aviation lean heavily on AID experts for guidance.

01 March 1917 : On March 1st Mr. Forster (Sevenoaks, U.), in the course of speech on the Army estimates, said : —

As far as the Royal Flying Corps is concerned, the supply of personnel, both of officers and men, has been maintained, although

the provision of skilled mechanics in sufficient quantities has presented difficulties which I think have been overcome. The importance of this cannot be overstated, for whilst, of course, troops of all kinds contribute their quota to the success of the whole Army, none do more valuable or more conspicuous work than the Royal Flying Corps in all the theatres of war. (Hear, hear).

We all recognise their intrepid daring and indifference to danger, which is only equalled by the skill with which they carry out their perilous duty and the value of their work both to the army in the field and to the safety of our people at home. (Hear, hear).

The training of officers in flying has been very largely extended.

It may interest the House to know that we are establishing new flying schools in Canada and in Egypt, and I should like to take this opportunity of acknowledging the valuable services of a large number of Colonial pilots in the Flying Corps. (Hear, hear).

There has been some difficulty and delay in obtaining the necessary aircraft, in spite of the assistance which has been given to us by the Ministry of Munitions, but I hope these difficulties have now been overcome.

The formation of the Air Board with extended powers and the entrusting of the practical business of the supply of aircraft both to the Navy and Army to the Ministry of Munitions will, it is hoped, give the Air Services the priority which their importance demands.

The policy of instituting an Air Board has for some time had the firm support of the Army Council, and, although the new arrangement

has been in force only for a week or two, its influence is already having effect. It must be remembered, however, that

whatever the efforts of the Air Board and the Ministry of Munitions, they cannot be expected to show at once a greatly increased output.

Anti-aircraft stations have been installed at various points, and,

though the actual buildings are only a few huts and officers in each case, there is much work involved in connection with the electrical connections and other accessories which is not always a matter of easy arrangement in isolated country districts. I am

not going to boast about what might happen in the event of renewed Zeppelin raids, but we have profited to the full by the experience that we have gained.

[Mr. Forster is to be congratulated on a very moderate and convincing statement of affairs, which contrasts highly favourably with the magniloquence of his predecessors in office. It is pleasing to find a Minister understating rather than overstating the work of his department, and Mr. Forster's future pronouncements on aeronautical affairs will carry the more weight on account of this brief and businesslike reference to the subjects—Ed.]



## Notes on "Civil Aviation"



7 April 1917 : United States declaration of war against Germany

April 1917 : The RFC suffers upwards of 30% attrition in air-crew during "Bloody April" with the introduction of the Fokker DI-III "Albatros".

April 1917 : 60 Sqn RFC - new aeroplanes were collected from Paris. Some of these "new" French built aeroplanes were not well built" and soon suffered from structural failures in the air.

1. Lieut. Grandin's fell to bits while diving on a hostile two-seater [possibly due to damage from machine-gun fire].
2. Caffyn's collapsed when practising firing at ground targets on the aerodrome and he was killed;
3. Brackenbury's collapsed when practising firing at ground targets on the aerodrome.
4. Ross's wings folded upwards when pulling out of a dive after firing a burst, he was badly injured.
5. Penny's left lower plane came off while diving on a Hun.
6. Penny flew the damaged aeroplane to a British aerodrome where he quietly reported to the squadron commander:
7. " My lower plane came off, so I thought I had better land. Sorry I left the patrol, sir."

The identified reason for the failures in the French manufactured aeroplanes was:

1. The use of badly seasoned wood
  2. Considerable weakening of the main spars by inserting dozens of little screws in them during manufacture.
- RFC-H.Q. were informed and the matter was put right.

60 Sqn. RFC Elementary work and maintenance:

Having exhausted their ammunition the pilots came back refilled with petrol and re-armed with 300 rounds then dashed off again to the chemical works without waiting for orders. Repairs to the 200 h.p. Renault engine, a type with which none of



## Notes on "Civil Aviation"

60 sqn mechanics were very familiar, take longer than expected.

Low flying [ground attack] became more popular with the higher command, though not with the pilots, as the war went on.

Ground Attack by the RFC helped to stop the enemy advance on the 5th and 3rd Army fronts during the German offensive of March 1918,

Hostile balloons were constantly attacked during April and May by:

Bishop,  
Ross,  
Molesworth,  
Penny  
Langwill,  
Hall,  
J. Elliott,  
Smart, and

April 2 : F. Bower - pursues [with his patrol] six hostile scouts a long way east of Douai in a very strong westerly wind. Though shot through the stomach during the fight he flew west and landed near Chipilly with his intestines hanging out. His machine is mechanically and structurally undamaged except by bullet holes.

April 3 : F. Bower dies of his wounds. His machine is flown back to the squadron without needing field repairs by another pilot.

After the Armistice when the the Air Force demobilisation began, the particulars of the terms of each officer's engagement were scrutinised.

it was surprising to find how many Americans were serving in English scout squadrons. Out of a total of twenty-five officers in each single seater squadron in France it seemed that at least three or four officers were "American" citizens who had represented themselves to be Canadian citizens in order to join in the war - SIXTY SQUADRON history R.A.F.

Moreover, the majority of these wore at least one medal for gallantry, the reason being, no doubt, that these young men were the very flower of the American fighting stock - SIXTY SQUADRON history R.A.F.

18 April 1917 : "Pacific Aero Products" renamed "The Boeing Airplane Company".

26 April 1917 : FLIGHT : The Army Council and Military Aeronautics. IN an Order in Council, published in the London Gazette of April 24th, setting forth the individual responsibilities of the members of the Army Council, the following appears:— " (f) The Director-General of Military Aeronautics shall be responsible to the Secretary of State for so much of the business relating to the administration of the Army Air Service as is not subject to the control of either the Air Board or the Ministry of Munitions, and as may be assigned to him from time to time by the Secretary of State."

26 April 1917 : FLIGHT : STEELS USED IN AERO WORK : paper on the " Use and Abuse of Steel," presented by Lieut.-Col. R. K. Bagnall-Wild and Lieut. E. W. Birch to the Institution of Automobile Engineers, and the one on " Steels used in Aero Work," read by Dr. W. K. Hatfield before the Aeronautical Society last week, furnish a good deal of valuable information on a subject which is becoming increasingly important.

In the former paper (which is now appearing in " FLIGHT ") the authors discussed many of the difficulties which have been met with in practice, and a study of their conclusions should enable manufacturers to avoid trouble ; while Dr. Hatfield in his paper discussed the subject chiefly from the metallurgical point of view. He emphasised the necessity for engineers responsible for the building of aeroplanes and engines, if they are to obtain anything like the best results from the materials now available,\* to study the characteristics and properties of those steels. They should understand the reason for the various heat treatments, and should appreciate the considerations which lead to the selection of any particular one as the means of placing the -steel in the final condition in which it may be expected to do the best service. There were two essentials in steel for aero work—(1) the use of high-class material, and (2) scientific methods in works practice.

Discussing the question of factor of strength, Dr. Hatfield said that, although it had been pointed out on many occasions that the use of the term " factor of safety " was misleading „ yet the erroneous use of the term still continued. It appeared



## Notes on "Civil Aviation"

to him that a true "factor of safety" should be the ratio between the stress which may be safely applied indefinitely under the actual working conditions to the stress actually employed, and not the ratio of ultimate stress of the material under a static test to stress thought to exist in practice, as calculated from imperfect data combined with many doubtful assumptions. This latter ratio, whilst very useful in formulating empirical rules, should really come under a very different name, such as, for instance, "factor of contingency," already proposed by Mr. Lanchester. The actual values of this factor, employed in modern design, have been arrived at largely by the method of trial.

Dr. Hatfield suggested that better results might be obtained, and fewer mysterious failures result, if the various contingencies to be allowed for were carefully examined and the "factor" placed on a more definite basis.

Dr. Hatfield also suggested that the several parts which had to be dealt with in aero work are really sufficiently small to permit conveniently of numerous quantitative destruction tests, and if more of these were made the engineer would be better able, in a practical manner, to obtain definite data upon which further progress in design might reasonably be expected.

26 April 1917 : FLIGHT : 'The Properties of Aerofoils and Aerodynamic Bodies.'

UNDER this title Mr. A. W. Judge has written a volume, which forms a companion to his "The Design of Aeroplanes," but which is, nevertheless, complete in itself to the extent indicated by its title. The merits of Mr. Judge's latest volume do not so much lie in any great originality or addition to present-day knowledge, as in the fact that he has collected and arranged in convenient form all the more important data already available on the subject of wing sections, bodies and struts. Extensive use has been made of the results published by the Advisory Committee for Aeronautics, and by Mons. G. Eiffel. Although these works are, of course, well known to those who have made a long study of aeronautics, there can be little doubt the rapidly increasing number of more recent students are not so familiar with them, and have in many instances found some difficulty in collating the various experiments, due chiefly to the different units employed in recording the results. Also, Eiffel's latest books have not yet been translated into English, a fact which, added to the difficulties of following with the desired closeness the expressions in metric units, may have prevented many students from making full use of the wealth of information contained in these excellent works. It is to these that Mr. Judge's latest book will especially appeal, as the author has converted Eiffel's results into the "absolute" coefficients employed by the National Physical Laboratory, thus making comparison of results obtained at the two institutions considerably simpler. A point which should help to recommend the book to those just taking up the study of aeronautics is that the mathematical side of the subject, although the theory of the cambered plane and the principle of aerodynamic similarity have been touched upon, has been kept very brief, and is so simply treated that anyone with a reasonably good education will have no difficulty in following it. The book, which is published by Whittaker and Co., is obtainable from the Offices, of "FLIGHT." The price is 15s. 6d. post free.

26 April 1917 : FLIGHT : A Roosevelt for the Flying Service. A REPORT from Ottawa states that Quentin Roosevelt, son of the ex-President of the United States, will take the aviation course at Camp Borden, and qualify for overseas service with the Canadian Flying Corps or with the American Expeditionary Force, if the latter is sent.

1917 : German submarines are reported to operate off Canada's East Coast.

May 1917 : Prime Minister Sir Robert Borden raises the issue of a distinct Canadian air arm. about a fifth of the RFC was Canadian. While visiting overseas, Borden appears to have heard some grumbling by Canadians about discrimination, lack of

## Notes on "Civil Aviation"

promotion and lack of formal recognition - See more at: <https://legionmagazine.com/en/2015/06/canadian-flyers-go-to-war/#sthash.Nujh0vay.dpuf>- See more at: <https://legionmagazine.com/en/2015/06/canadian-flyers-go-to-war/#sthash.Nujh0vay.dpuf>

Canadian air force personnel flew with British units. Discipline of British air units was governed by the United Kingdom Air Force (Constitution) Act 1917.

The Air Force (Constitution) Act, 1917, (U.K.) 7 & 8 Geo. V, c. 51 forms the Second Schedule to the Air Force (Constitution) Act, 1917.) which includes the Air Force Act.

The United Kingdom Air Force (Constitution) Act of 1917 is a copy of the Army Act - replaces word for word the "Army" with "Air Force" .

Since 1917 military law applicable to British Air Forces has remained virtually identical to the law governing the British Army.

Canadian personnel enlist and fly with British units.

Discipline of British air units is governed by the United Kingdom Air Force (Constitution) Act of 1917.

(McDonald, "The Trail of Discipline: The Historical Roots of Canadian Military Law" at 19.)

May 1917 : United States War Department selects the British designed DeHavilland 4 as the multipurpose battle plane it would build under license; however, a commission headed by Col. Raynauld C. Bolling and Capt. Virginius E. Clark, sent to Paris by the secretary of war to consult with the Allies' aviation experts, determined that not only was the DH-4's standard engine underpowered for the airplane to perform as well as the U.S. Army wanted it to do, but that so too were all other existing American and European engines. The Bolling-Clark group identified the need for development of a new engine for the DH in June 1917, precisely the time that an initial layout plan for Langley Field was being finished by Albert Kahn's architectural firm of Detroit. Within the month, an engineering design of the new "Liberty" engine was ready By 17 July 1917 Henry Ford and the Packard Motor Company had a prototype Liberty engine running.

### 30 May 1917 : THE UK CIVIL AERIAL TRANSPORT

- COMMITTEE: Lord Northcliffe (Chairman).—Proprietor of the "Times," "Daily Mail," and numerous other publications.

Was the first newspaper proprietor to grasp the possibilities of aviation, and has given large sums in prizes in the endeavour to advertise flying among the British Public. During the war he has used his newspapers to support the various agitations for adequate aircraft equipment, and has thus been of material assistance to the Flying Services.

Major Baird, M.P. (Deputy Chairman) .—Recently nominated to reply for the Air Board to criticisms in the House of Commons. Is not known to have been interested in aviation previously, but has endeavoured to inform himself on the subject in the short time available.

Is said to have qualified for his Aviator's Certificate, and has done a good deal of cross-country flying as a passenger. Has, apparently, implicit faith in Official Designers, and has still a great deal to learn about flying, both historically and technically.

The Duke of Athole.—Chairman of the Royal Aero Club. As Marquess of Tullibardine was interested in the early experiments with the inherently stable Dunne » aeroplane at Blair Atholl, and was the chief financial support of the Blair Atholl Aeroplane Syndicate, which was formed to develop the knowledge of inherent stability long before the existence of that quality was discovered by Government officials. Has been a highly valued supporter of aviation in general for many years, and has flown as a passenger, but one can hardly support the statement in the "Times" that "he has had actual experience as an airman."

## Notes on "Civil Aviation"

Coeonel Lord Montagu.—One of the earliest supporters of aviation in this country, and possesses foresight concerning the development of aviation amounting almost to the gift of prophecy, as shown by his speeches in the House of Lords so far back as 1909. Rendered highly valuable service to the Empire during the agitations for adequate aerial forces early in 1916, by his outspoken and well-informed criticism, and especially by his resignation, from the "Derby Committee" as a protest against its impotence. As a Peer of the Realm his criticism impressed on the British Public the fact that similar criticisms by mere commoners were not mere vulgar agitation. Does not profess to be a practical aviator, not being a pilot, so the "Times" scarcely seems correct in describing him as "one of the leading experts on questions of airmanship."

Lord Sydenham, G.C.S.I.—As Sir George Sydenham Clarke earned the reputation of being one of the most distinguished soldiers and administrators of the Empire. A firm believer in the possibilities of aircraft, and as one of the leading authorities on Military Science as well as on Colonial Administration is particularly worthy of trust and consultation where the employment of aircraft by Governments is concerned. Is a man of high principles, and has the courage of his convictions, as was shown by his resignation from the previous Air Board as a protest against its lack of executive power. Should have occupied an important position in the present Air Board.

Mr. Baefour Browne, K.C.—A distinguished lawyer, an authority on patents, an amiable gentleman, and a member of the Government Enquiry Committee which in 1916 endorsed so many criticisms of the Administration of the Royal Flying Corps.

Mr. A. E. Berriman.—Formerly an aeronautical and motor journalist and writer. A clever mathematician. At present technical adviser on aeroplane and aeroengine construction to the Daimler Motor Car Company of Coventry.

Mr. G. B. Cockburn.—One of the pioneers of British Aviation. Was the only British competitor at the great aviation meeting at Reims in 1909, where he flew the first Farman biplane ever built. Continued thereafter

to experiment at his OWN expense on Salisbury Plain. In 1911 devoted some six months of his time, entirely at his OWN cost, to teaching flying to the first four officers permitted, to fly officially by the Admiralty on Short biplanes lent free of charge by Mr. Frank McClean. [Note.—So far as can be gathered, neither Mr. Cockburn nor Mr. McClean ever received even so much as a letter of thanks from their Lordships of the Admiralty for their patriotic generosity.]

Later, when the Aeronautical Inspection Department R.F.C. was formed under the late Lieut. -Col. Fulton, C.B., his close friend, Mr. Cockburn, at his urgent request, joined him as inspector of aeroplanes, and in the onerous duties he has continued to carry out ever since with marked ability and moral courage. On every aspect of aviation Mr. Cockburn's views are of the highest value, and his appointment to this committee



is a singularly happy selection.

Mr. G. Hon' Thomas.—With the exception, perhaps, of the late Sir George White, was the only business man to have faith in the commercial future of aircraft in the earliest days. Did much to impress this country with the possibilities of flying by introducing the best French engines and aeroplanes and pilots. Set up the beginnings of his present vast concern, the Aircraft Mfg. Co., Ltd., at a time when every official' discouragement was, given to British pioneers.

Is now head of the biggest aircraft and aero-engine combination in the world, as the result of his foresight. Possesses unlimited faith in the future of aerial transport, and possesses the mental capacity and organising ability to make his faith a business asset.

Mr. Claude Johnson.—Managing Director of the Rolls-Royce Motor Car Company, who have recently produced a highly successful aero-engine as the result of that Government encouragement which purely aeroengine firms lacked before the war.

Mr. Joynson-Hicks, M.P.—Member of Brentford Division of Middlesex. Ha's been for years a strenuous critic of Governmental apathy towards the Flying Services. In 1913 and early 1914 twice convicted the War Office of lying about the number of aeroplanes available for the Royal Flying Corps. Consistently attacked Lt.-Col. Seely, when Minister for War, on aerial\* affairs. Supported energetically the 1915 and 1916 agitations for adequate equipment of the Flying. Services, and has rendered valuable service in these matters.

Professor F. W. Lanchester.—Designer of the original Lanchester motor-car. Is, or at any rate was recently, connected in a technical capacity with the Daimler motor-car firm. Has contributed copiously to aeronautical journalism, and has lectured largely on the subject of the excellence of Government aeroplanes. Has addressed political voters in the Government interests against the doctrines ' of aeronautical reformers.

Is known to have designed an aero-engine which did not function, and an aeroplane which did not fly, but is not publicly known to have designed either form of mechanism with success. Is a prominent member of the Government Advisory Committee for Aeronautics. Lieutenant-Colonel Mervyn O'Gorman, C.B.

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Formerly «a consulting engineer concerned with the electrical profession and the motor-car' trade. In 1909 became, during half his time per week, Superintendent of the Army Aircraft Factory at Farnborough, which later became the Royal Aircraft Factory. After the outbreak of war took up full-time employment at that establishment, and was appointed Lieut. -Col. (T.F. temp.), on the Formation of a Territorial Unit R.F.C. known as Hampshire Aircraft Parks—from among the employees , of the R.A.F. After the agitations of 1916 and the investigation of the R.A.F. organisation by the " Burbidge Committee," :was transferred to Adastral House as technical adviser to Lieut. -General Sir David

## Notes on "Civil Aviation"

Henderson, Director-General of Military Aeronautics. -

Major-General Ruck, C.B.— An able soldier and organiser. Chairman of the Aeronautical Society of Great Britain—Which should be most carefully , distinguished

from the Aeronautical Institute, a name which is apt to be confused with it.

Under his chairmanship the Society'- has acquired a new lease of life, and is doing most valuable work.

Mr. J. D. Siddeley.—Managing Director of the Siddeley-Deasy motor-car firm. Formerly of the Rover Cy'de Company, and later of the Wolseley Motor Company. Has recently become concerned with the production of aero-engines.

Mr. T. O . M. Sopwith.—A pioneer of British Aviation, and. in his day one of our most skilful pilots. Won. the De Forest ,£4,000 prize in 1911 for the longest flight . out of Great Britain on an all-British machine, using a ' Howard Wright biplane .and an E.N.V. engine. Later flew in America. On his return began to build aeroplanes, and consistently beat all performances by official , productions. Revolutionised, ideas of design by pro- - ducing the famous "tabloid" single-seater, and has" since at frequent intervals produced war aeroplanes far j

surpassing contemporary enemy designs,, only to have his own designs adopted in quantities months later\*

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when the enemy had almost reached the same level. '

Has been equally brilliant as a pilot, an originator of design, a producer in quantities, and as a business man.

Possesses extraordinarily mature judgment in combination with youthfulness of idea.

Mr. H. G. WELLS.—Described by the "Times" as.

"novelist and man of. science, whose 'War of the , Worlds ' was almost prophetic with reference to many aerial developments of to-day." Apart from the fact that the "War of the Worlds " dealt with the visit 'of supposititious Martians fo this world and that the title is evidently a' mistake for " The War in the Air," the-- description seems unfitting. LTnless one includes the study of the manners and customs of drapers' assistants among the sciences, one fails to see Mr. Wells' claim to be a man of science. Most of his scientific allusions seem to be based on a smattering of the kind which mne might acquire from a cheap encyclopaedia. The late lamented Jules Verne wasHar more scientific and far more prophetic, if less successful in depicting the sordidity of the lower middle classes.'

Mr. Wells' chief claim to fame seems to be as a sociologist—of a somewhat , entomological kind—and more recently his sociolog}' seems to have tfended Towards republicanism. One fails utterly to see any reason whatever for his inclusion on this Committee.

Mr. H. White-Smith.—Secretary and a Director of.

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the British and Colonial Aeroplane Co., Ltd., the first

great business to be founded exclusively for the production of aircraft. Was concerned in the foundation of his firm in conjunction with his uncle, the late Sir George White, Bart. Is Chairman of the Society of British Aircraft Constructors. A business man—with an exceptionally fine training, a pioneer of aircraft construction, a man of sound judgment and of foresight, with the ability to set forth the views of aircraft constructors in a moderate manner such as cannot offend the most hardened official, his appointment is one which will be welcomed by all.

Mr. W. Tyson Wilson, M.P.—Labour member for West Houghton (Lancs). Said by the "Times" to be one of the founders of the Bolton Building Trades Federation. Has recently asked in the House a few questions on aircraft of a kind which made one imagine that they were designed to help Ministers to get out statements to the advantage of the Government. Otherwise has no concern with aircraft, unless one argues that the Building Trade is as much entitled to representation as is the Motor Trade, especially in view of possible contact between commercial aeroplanes and suburban villas after the war.

Sir Laurence Guillemard, K. C.B.—Representing the Treasury and Board of Customs. Stated by the "Times" to have been Chairman of the Board of Customs since 1908—

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will doubtless pay special attention to aerial smuggling.

Colonel J. W. Pringle, R.E.—Representing the Board of Trade. One believes that this officer has been largely concerned with the investigation of railway collisions. The appointment therefore seems eminently

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sound in view of future possibilities of aerial transport.

The Earl of Drogheda.—Representing the Foreign Office. Has long been intensely interested in aeroplanes, and has the best possible information on the

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latest developments constantly available to him. He possesses keen judgment, and is personally immensely popular with all who meet him either officially or unofficially, so that in our international dealings in aircraft affairs after the war, as well as in our preparations at present, he should be a most valuable member of the Committee.

Mr. G. E. A. Grindle, C.M.G.—Representing the Colonial Office. One has to confess complete and lamentable ignorance of the qualifications of this doubtless estimable official.

Mr. G. E. P. Murray, C.B.—Secretary of the Post Office, representing the Postmaster-General. Another excellent appointment.

The India Office will be represented by Lord Montagu, who will doubtless do it justice, but one would have preferred to see Lord Montagu's imagination freed from all local ties, and to have seen some experienced Indian official appointed specially for India's benefit.

## Notes on "Civil Aviation"

- Sir Thomas Mackenzie, High Commissioner for New Zealand, and the Rx. Hon. W. -P. Schreiner, High Commissioner for South Africa, will represent their respective nation's interests, but one would like to see natives of those countries who have had aviation experience taken into consultation. For instance, Captain J. J. Hammond, R.F.C., could doubtless say much about the possibilities of New Zealand. Lieut. John Weston, R.N.V.R., a Burgher of the Free State, who has flown ever since 1910, who is one of the very few men who hold certificates as pilots of aeroplanes, airships, and balloons, and who has built and repaired his own aeroplanes and engines in South Africa, should be of high value to the Committee.

It is hoped that Canada and Australia will also nominate representatives. One hopes they will nominate some able man who knows something of practical aviation, and will not be content with purely political [ appointments.

Captain Vyvyan has been nominated by the Fifth Sea Lord of the Admiralty to represent the R.N.A.S., which otherwise seems poorly represented when compared with R.F.C. interests.

Brigadier-General Brancker will represent the R.F.C., an obvious and wholly praiseworthy appointment. As one who has never failed to express his faith in the future of flying, as an experienced pilot, as an able soldier, as a man of ideas, and as an administrator and organiser, General Brancker's appointment can only be productive of good results.

The Meteorological Office has also been asked to name a representative. One hopes that his ideas on aviation will be less foggy than those of the members of that distinguished office who have hitherto delivered themselves in public on the subject.

Mr. D. O. Malcolm, whose connection with aviation

, is not made public, is announced as the Secretary of the Committee, whose offices will be at Winchester House, St. James's Square, S.W.

Purely Unofficial.

It was stated officially that one or two additional names will be subsequently announced, and one hopes that these choices will be wisely made.

One notable omission so far is the name of anyone concerned with purely marine work, such as is entailed

in big flying-boat problems. As the only officer in the R.N.A.S. whom Dr. MacNamara was able to mention in the House recently as having produced a seaplane fit for service, Commander John Porte's name seems a necessary addition. Commander Porte was one of our earliest and best pilots, he has had plenty of business experience, and he has been proved to be a capable and far-sighted constructor. The pre-war Transatlantic Wanamaker-Curtiss-Porte boat has more than justified its existence<sup>1</sup>

, and it is the obvious machine for river transport of the future.

Commander Porte knows more about the problems of

## Notes on "Civil Aviation"

producing big flying boats than does any living man, but as he is now altogether in the Service there should be a civilian representative of the same interests, and here the choice seems to fall obviously on Mr. S. E. Saunders, of Cowes, who built the hulls for the first Sopwith "Bat-boats," which were so brilliantly successful, and has built many others since. Essentially a "marine engineer," Mr. Saunders should be a most valuable acquisition to the Committee.

Another notable omission is that of all "lighter-than-air" representatives. Personally one feels that at first many people would rather journey aurally by airship than by aeroplane, and that airship lines to Paris may for long compete with aeroplanes. The evident representative of the "lighter-than-air" branch, from a Service point of view, should be Colonel Maitland, whose quiet and convincing method of discussion, whose vast experience, and whose sound judgment should be of very great value. Also, in view of the fact that he was the only civilian airship constructor and pilot to achieve results, and as the great pioneer of British airships, Mr. E. T. Willows, should certainly be called upon for his mature knowledge.

There are other omissions, some even more surprising than some of the inclusions, and certain of these are as surprising as anything that has happened in the war. For instance, one is surprised that Mr. Butcher and Mr. Charles Bright were omitted, after the notably good work which they did on the Air Enquiry Committee as exemplified by the Committee's Report.

But probably enough has been said for the moment, till we see how the Committee shapes when it gets to work. There are sufficient able and honest men on the Committee to prevent it from ever being a real danger to the community, or even to the future of flying, and one hopes that they will so guide the whole mass that, whatever powers may ultimately be conferred upon it may be used to make up to some extent the loss of progress which has been caused by officialdom in the past.

—C. G. G

June 1917 : Aircraft Production Board established in America. Bolling Mission sails for Europe to gain information for an American aircraft programme.

June 1917 : 958 English companies are engaged on the manufacture of aeroplanes. 301 of these are direct contractors to the Crown, and 657 are sub-contractors" American journal "Flying".

June 1917 : General Sir Sefton Brancker, Deputy Director General of Military Aeronautics, submitted proposals to centralise the technical training of men, women and boys in a new school to be located at Halton, Buckinghamshire.

16 June 1917: The first contingent of American aviation engineers (93 civilians) sail to England to study British and French aircraft manufacture.

20 June 1917: Aeroplane weekly. "

Cafin Beaufoi John Warwick Montessor Moore,  
joined the RFR ^ kiled m a flyinff joined accident on June 10th, R.F.C. in 1914. He was an electrical engineer hav

## Notes on "Civil Aviation"

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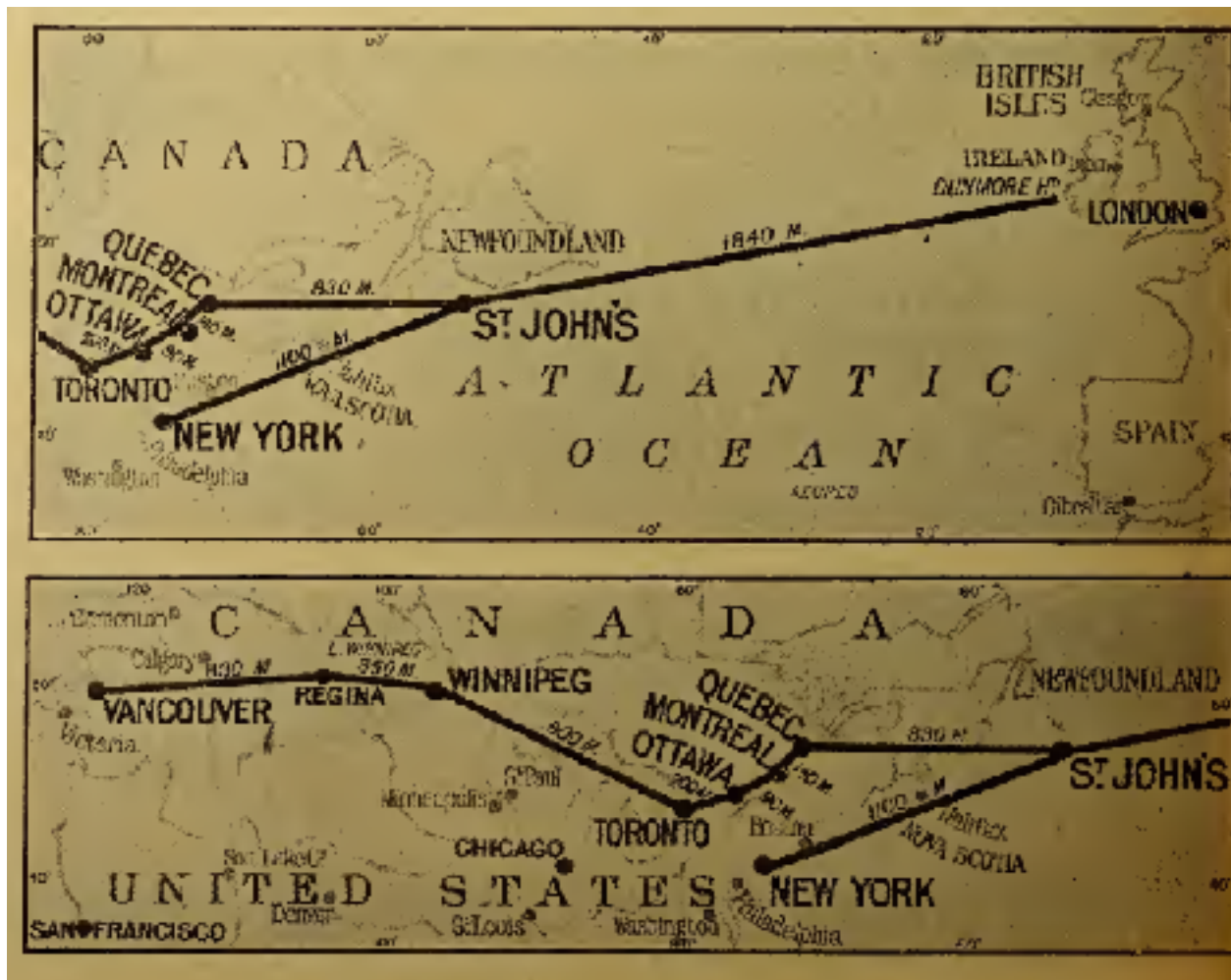
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d ielegrapn enffmeers, of Woodland Works, Chad- well Heath. He was a member of tlft Institute of Electrical Engineers.

About the tinjie of the outbreak of war h4 returned rom Canada, where he had been engaged on important electrical undertakings, and at once offered himself for service - the R FC refUSED ft

a commission on medical grounds, but joined R-F.C as a first-class air mechanic. Within a few momhs he received his commission and pilot's certificate, and shortly After- wards went to the front. There he remained for about twelve months, during which time he was recommended for the Military Cross, which he eventually received at the hands of the King at Buckingham Palace on February 14th last. Early this yea? he was recalled, having been selected to give instruction in'the manoeuvring of the latest types of aircraft, and it was while dutles that he was killed.



## Notes on "Civil Aviation"

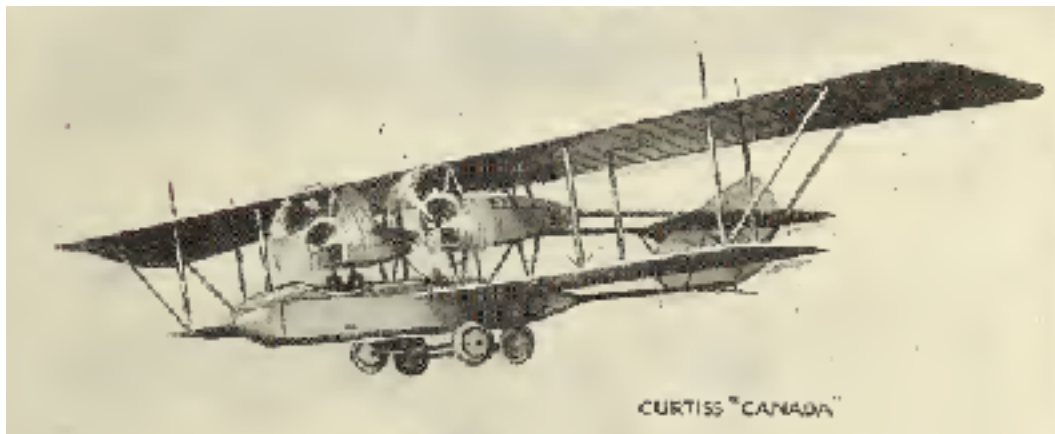
25 June 1917 : AT the inquest on Lieut. Jacob at Birmingham on June 25th, nfer Birmingham, a statement by Lieut. Villiers, who was injured and is in hospital, was read. He said that after climbing to 3,500 ft. they looped once, and -were preparing to loop again when he found the controls were jammed. The machine side-slippec and fell 2,800 ft. He tried to break the fall by pulling into two trees, but failed.

25 June 1917 : : A verdict of " Accidental Death " was returned at an inquest at Plymouth re the death of Flight Sub-Lieut. H. L. Cowe, R.N.A.S., fatally injured when his seaplane nose dived from a height of 1,000 ft.

26 June 1917 : : A verdict of " Accidental Death" was returned at an inquest at Hounslow re the deaths of Capt. H. B. Hamber, R.F.C., and Air-Mech. Stanesau. through their aeroplane nose-diving into a field at Harlington. Air-Mech. Stanesau was killed outright, Capt. Hamber later died from his injuries. It was shown in evidence that Capt. Hamber went with Air-Mech. Stanesau to the assistance of another pilot who had come down. After seeing him safely off, Capt. Hamber and Air-Mech. Stanesau reascended. Capt. Hamber's machine was observed to turn sharply, fall for some distance, resume a level course, and finally crash to the earth from a height of between 300 and 400 ft. Major Chadwick, R.F.C., stated that the Accidents Committee had held an official enquiry, but could advance no theory as to the cause of the crash.

25 June 1917 : 2nd Lieut. J. H. E. Barron, 42, of the Royal Flying Corps, was flying a biplane at Hendon when it fell about 50 ft. The machine was smashed and the officer killed. The accident was attributed to the officer trying to turn the machine as he was rising.

25 June 1917 : Capt. G. W. T. Lindsay, R.A., and 1st Air-Mech. C. E. Sharman were killed instantly when their aeroplane fell from a considerable height in a field near Bristol, UK.



26 July 1916 : The Aeroplane Weekly records the issue of the first annual report of the United States National Advisory Committee for Aeronautics.

18 August 1917 : Air Mechanic Ingledew signs an affidavit that he was crew aboard H.M. Seaplane 9860, under the command of Flight Sub-Lieutenant Charles Mossop, on patrol 27 miles north of Cape Barfleur, sights, attacks and sinks what is believed to be German submarine UB-32, there were no survivors of the 35 officers and men on board. Lieutenant Mossop was later killed on active service on August 12, 1918, and Mr. Ingledew was the sole survivor of the engagement with the submarine serving as an air mechanic and as a flight cadet in the RAF station, Cherbourg. Prize Bounty for Sinking a UB-32 was awarded in the Prize Court on Monday 05 June 1919 - Lord Sterndale awarded ^ 175 prize bounty to the pilot and mechanic of H.M. Seaplane 9860, at the rate of ^ 5 a head of its crew of 35. The occupants of the seaplane were Flight Sub-Lieutenant C. S. Mossop, R.N.A.S., D.S.C., and A. E. Ingledew, at the time serving as an air mechanic and as a flight cadet in the R A F . station, Cherbourg.



## Notes on "Civil Aviation"

September 1917 : Sanction was obtained to fund the setting up at Government expense, of three new UK National Aircraft Factories, to be operated under the control of the Department of Aircraft Production.

June 1917 : UK : General Sefton Brancker, Deputy Director General of Military Aeronautics, submits proposals to "centralise the technical training of men, women and boys" in a new school to be located at Halton.<sup>89</sup>

June 1917 : UK : Cranwell station houses<sup>90</sup>:

- A. 6,000 air-men mechanics
- B. 2,000 boys at the Boys Training Depot, West Camp.
- C. 1,700 instructors and other staff.
- D. 2,000 women training in a variety of aircraft trades.

June 1917 : UK : Hugh Trenchard's view on the RFC / RAF:<sup>91</sup>

1. An ever-more technical service needing High Quality - "Skilled" mechanics
2. Similarly skilled men in the civil market who had served "full apprenticeships" could command good wages.
3. Similarly skilled men in the civil market served 5 year apprenticeships.
4. The fledgling RAF could not hope to compete with the civil market for these skilled technical trades-men
5. the only way to recruit high quality mechanics was to train them internally.
6. Start by recruiting well educated boys and train them as the nucleus of the RAF:
  1. Pre-selection examinations by their local education authorities at age 15-16.
  2. Pass the four-part the Civil Service Commissioners examination (As future Officers, the boys were joining the civil service in the United Kingdom as Crown employees):
    1. mathematics,
    2. experimental science,
    3. English,
    4. general paper
  3. Must pass the Military - RAF medical examination.
  4. Once accepted, Boy Mechanics attested for 10 years' regular service with a further two years in the reserve as RAF trades-men upon their entry into the program - their term of service commencing upon completing their apprenticeship.



7. The RAF offered incentives to the apprentices in the form of:

- A. Able to buy themselves out of the Service for £20 within the first three months (£100 thereafter)
- B. Complete their ordinary British education subjects:
  - A. English,

<sup>89</sup> The 103rd Entry Association Newsletter No 8 "TRENCHARD'S BRATS BLOW OUT" By Gp Capt W J Taylor OBE RAF DD Spt Pol 2 (RAF)

<sup>90</sup> The 103rd Entry Association Newsletter No 8 "TRENCHARD'S BRATS BLOW OUT" By Gp Capt W J Taylor OBE RAF DD Spt Pol 2 (RAF)

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## Notes on "Civil Aviation"

- B. Literature and history
- C. Mathematics,
- D. Physics, and in addition
- E. Receive education on the Theory of Flight.
- C. Receive practical hands-on workshop training in repair and maintenance of Aircraft / Engines / Components.
- D. Receive Air experience - flying for boy mechanics provided on the North Airfield in the Boys' Wing's own aircraft:
  - A. a Vickers Vimy,
  - B. a DH9A, 2 Avro 504s,
  - C. a Bristol Fighter with a Falcon III engine.
- E. Complete their trades apprenticeship in 3 yrs instead of the 5 yrs that civilian tradesmen required.
- F. Complete their trades apprenticeship in one of 5 trades and / or specialisations:
  - 1. Fitter
    - A. Fitter - Aero Engines
    - B. Fitter - Armourer
  - 2. Carpenter
  - 3. Sheet Metal Worker
  - 4. Electrical
- G. Possible cadetship at the RAF Staff College for the best of the apprentices (exemplary completion of their apprenticeship by passing their school examinations as well as their trade board examinations):
  - A. pilot training while at the RAF Staff College
  - B. permanent commissions upon graduation from the RAF Staff College
  - C. Required top scores in their Ordinary British Education examinations
  - D. Required top scores in their trade's examinations which consisted of:
    - A. An Oral examination
    - B. Practical testing of their bench and assembly work
    - C. A Written Examination
- H. pre-selection for early promotion.
- I. Boy Mechanics were provided with free food, lodging and uniforms, and they were paid:

Product	Per gallon		
	£	s	d
Aviation petrol, exclusive of tin,	-	3	5
Castrol oil " R " lubricating oil, inclusive of tin	-	10	3
Oil, mineral, thick and thin, inclusive of tin	-	4	8
Castor oil, pure pharmaceutical, inclusive of tin	-	7	11
Castor oil, treated, inclusive of tin	-	8	1

- 1. 1 shilling & 6 pence per day if under 18 (1921)
- 2. 3 shillings per day if over 18 (1921)
- 3. Note that Rates of pay for RAF trades-men (1921) were:
  - 1. Aircraft-man 2nd Class: 4 shillings per day
  - 2. Corporal: 7 shillings & 9 pence per day
  - 3. Sergeant Major 1st Class: 13 shillings per day
  - 4. Cranwell Officer Cadet: 5 shillings per day
  - 5. Flying Officer: £1 & 3 shillings per day
  - 6. Wing Commander: £2 per day
  - 7. Air Chief Marshal: £7 per day

- 8. Apprentices must complete their apprenticeship by passing their school examinations as well as their trade board examinations. They are graded based upon their results and then assigned a posting to the Force.
- 9.
- 10.
- 11.
- 12.

## Notes on "Civil Aviation"



13. These skilled RAF trades-men would form 40% of all ground-crew and be 60% of the "most skilled" tradesmen in the Air Force.

14. Added benefit - their training would "foster a spirit in the RAF" on which so much would depend.

14 August 1917 : Sinking of S.S Athos by german u-boat results in deaths 500+ Chinese enroute for france.- Chine declares war on germany..

October 1919 : The Apprentice "scheme" (Programme) was promulgated to Local Education Authorities. 235 boys were accepted for the 1st three-year apprenticeship.

(Source Ref : The 103rd Entry Association Newsletter No 8 "TRENCHARD'S BRATS BLOW OUT" By Gp Capt W J Taylor OBE RAF DD

Spt Pol 2 (RAF))

January 1920 : Cranwell UK : 235 Boy Mechanic apprentices arrive for the 1st three-year apprenticeship.

(Source Ref : The 103rd Entry Association Newsletter No 8 "TRENCHARD'S BRATS BLOW OUT" By Gp Capt W J Taylor OBE RAF DD Spt Pol 2 (RAF))

September 1920 : 242 boy Boy Mechanic apprentices arrived at Cranwell. (Source Ref : The 103rd Entry Association Newsletter No 8 "TRENCHARD'S BRATS BLOW OUT" By Gp Capt W J Taylor OBE RAF DD Spt Pol 2 (RAF))

January 1922 : 5th Boy Mechanic Apprentice Entry arrives at Halton - Halton's 1st. "Boy Mechanic Apprentice" re termed to "Aircraft Apprentice". The principal trades were further sub-divided into particular specialisations, such as "Fitter - Aero Engines", or "Fitter - Armourer". Having been allotted to a trade and kitted out, apprentices were also allocated to a Section (later to become known as a Wing), which served to sub-divide the huge organisation. (Source Ref : The 103rd Entry Association Newsletter No 8 "TRENCHARD'S BRATS BLOW OUT" By Gp Capt W J Taylor OBE RAF DD Spt Pol 2 (RAF))

By the end of the 1920s, the trade of "Rigger - Metal" had been introduced to prepare apprentices for work on the new generation of all-metal aeroplanes then under development. The majority of apprentices began their training at Halton, although those destined for the electrical trade went to Flowerdown, near Winchester. Having been allotted to a trade and kitted out, apprentices were also allocated to a Section (later to become known as a Wing), which served to sub-divide the huge organisation that had grown out of the former Rothschild estate. (Source Ref : The 103rd Entry Association Newsletter No 8 "TRENCHARD'S BRATS BLOW OUT" By Gp Capt W J Taylor OBE RAF DD Spt Pol 2 (RAF))

1 April 1916 : The Royal Naval Air Service Central Training Establishment Cranwell opens under the command of Commodore Godfrey Paine CB MVO Royal Navy. Cranwell includes a Boys' Training Wing to train young RNAS ratings as air mechanics and riggers.

by 1918 there were 500 RNAS boys in training at Cranwell, with numbers planned to rise to 1,500.

With the formation of the RAF in April 1918, boys' training was to be concentrated at Cranwell but, as the new brick buildings at East Camp were not yet completed, tents were used for the 300-plus RFC boys who arrived in April - from Halton of all places.

In time the boys' numbers were to rise to a total of 2,500.

Prince Albert was appointed to RNAS CTE Cranwell on 1 January 1918, and arrived in February 1918. He served initially as Officer in Charge of Boys, and later as OC 4 Sqn in West Camp. became the first member of the Royal Family to gain his pilot's certificate. He was also the only member of the Royal Family (and future King) to be married in RAF uniform.

RAF Boy Mechanic and Apprentice Training, 1918-1926 the new Air Ministry intended from the outset to create a permanent home for technical training at Halton it was decided to use Cranwell for the training of boys for the RAF until there was enough permanent accommodation at Halton.

Plans called for a student population of 2,000, with an instructional staff of 25 officers and 340

## Notes on "Civil Aviation"

airmen.

The new barrack blocks and other accommodation, begun by the RNAS, provided the wherewithal to do this, giving the boys (for the first time) hot water, real beds, mattresses and sheets. Prince Albert's Boys' Wing became a Boy Mechanics School and then a Boys' Training Wing, before being renamed as No 2 School of Technical Training (Boys) in March 1920. In April 1921 it became the Boys' Wing of the Cadet College Cranwell, which remained its name until October 1925 when it became No 4 (Apprentices) Wing. As the name suggests, by this time the training of boys had become the RAF Apprentice Scheme.

### The Apprentice Scheme

(originally known as the Boy Mechanic Scheme) was promulgated to local education authorities in November 1919, and formally opened on 26 April 1920.

The first entry of 235 boys, selected against 300 vacancies with plans for 1,000 per year, set off for Cranwell on 18 January 1921.

If desired,, initially in the old RNAS workshops in West Camp.

Indications are that the latter was broader, though not as thorough, as the training that would be provided at Halton.

Apprentice schedule						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
classrooms	classrooms	classrooms	classrooms	classrooms	morning – drill	
workshops	workshops	workshops	workshops	workshops	morning inspection - barracks	morning – church parade
		afternoon - sports			morning inspection - boys	afternoon - allowed out of camp
		allowed out of camp - after sports			afternoon - allowed out of camp	
Boys over 18 - allowed to smoke - only while off camp.						
no social interaction – in those days officers and airmen seldom met except on duty.						
air-men seemed to be extremely conscious of their status and certain well-defined rights that officers were at pains to respect.						

## Notes on "Civil Aviation"

Cranwell remained 'overspill' for apprentice fitters and riggers until 1926.

In 1924 there were still 981 boys in training at Cranwell, as by December of that year there was still only accommodation at Halton for 2,000 apprentices against the eventual need for 4,000. In October 1925, the Boys' Wing became No 4 (Apprentice) Wing and the last remaining Apprentices (Entries 9-14) moved from Cranwell to Halton in August 1926 – taking with them the tradition of the apprentice Pipe Band.

1925 : All apprentice training was now concentrated at Halton, with the exception of electrical and wireless training at Flowerdown, near Winchester, and armament and gunnery training at Eastchurch, near Chatham in Kent. The last entry to complete training at Cranwell was No 8, among whose 600 boys was Frank Whittle, who had joined as an apprentice rigger in September 1923. Whittle was amongst 18 Cranwell boys who were awarded cadetships at the Cadet College; three of these went on to win College Prizes, and one was the first aircraft apprentice to be awarded a Wakefield Scholarship to the College. The Cranwell boys' Wing had also produced over 60 corporals and some 600 Leading Aircraftmen (LACs) between 1920 and 1926. With the departure of No 4 (Apprentice) Wing in 1926 there was no Boy or Apprentice training at Cranwell until the arrival in August 1929 of the Electrical and Wireless School (E&WS) from RAF Flowerdown. an RFC School for Wireless Operators was formed in 1915 in the Town Hall in South Farnborough. In 1918 with the formation of the RAF these units were combined to become No 1 (T) Wireless School RAF at Flowerdown, renamed as the Electrical and Wireless School in July 1919. From 1922 the Electrical and Wireless School played its part in the RAF Apprentice Scheme, with the top 40 apprentices in each intake being sent to Flowerdown for training in what were seen as the most technically challenging trades. it was not until 1929 that the School (at that time coincidentally under the command of Gp Capt A L Godman, who had been the first Assistant Commandant of the RAF Cadet College at Cranwell in 1920-21) moved to East Camp at Cranwell. The Electrical and Wireless School trained officers as well as apprentices, and, from 1934, boy entrants were also introduced after a reorganisation of the electrical and signals trades. By 1936 the School was divided into two wings: No 1 Wing – training airmen as wireless operators (1,103 men under

training); and No 2 Wing – 152 aircraft apprentices training as Instrument Makers; 573 aircraft apprentices training as wireless operator/mechanics; 575 boy entrants training as wireless operators; officers on the 14-month Officers' Long Signals Courses, and a variety of refresher courses.

No 1 E&WS had its own aircraft, which flew from the North Airfield at Cranwell.

By 1939 these included Westland Wallace and Wapiti, Vickers Valentia, Tiger Moths and Miles Magisters. By the outbreak of war in September 1939 there were 2,500 officers and men under training in East Camp, compared to 150 or so in West Camp. Courses included:

RAFVR Officers Signals 6 months.

Aircraft Apprentice 2 years.

W Op/Mech

Boy Entrants W Op 1 year.

Airmen W Op/Mech 32 weeks.

Airmen W Mech 8 weeks.

Air Gunners W Op 12 weeks.

Airmen Teleprinter Op 5 weeks.

Nobel Prize winner 1979 received the Nobel Prize for Medicine for his work on computer-assisted tomography – what we know today as the CAT body scanner.

Cpl (sir) Godfrey Hounsfield was a Radar

Mechanic Instructor at Cranwell where,

in his spare time, he sat and passed the City and Guilds examination in Radio Communications.

T E Lawrence served at Cranwell as AC2

Shaw 1925-26, and observed: "But there is

rising up a second category of airman, the Boy Apprentice . . . Soon the ex-boy will be

the majority, and the RAF I knew will be superseded and forgotten . . . The airmen

of the future will not be owned, body and soul, by their service. Rather, they will be

the service, maintaining it, and their rights

in it, as one with the officers . . . The ex-Boys

are professionally in the RAF as a privilege,

making it their home. Soon, when they

have made their style felt, officers will only enter their airmen's rooms accompanied, by invitation, guest-like and bare-headed, like us in an officers' mess . . . The era of a real partnership in our very difficult achievement must come, if progress is to be lasting."

source : RAF SOTA Vol 3 No 1-2, 2008 Boy and Apprentice Training at Cranwell 1916-1952 By Wg Cdr Andy Tait.

1924 : Cranwell UK : 981 boys arrive for their three-year Aircraft apprenticeship.



1917 : UK - Jan Christian Smuts, head of the committee, recommended in 1917 that an "air service" be created that would be "independent" of the other two branches (a.k.a the "Independent Air Force") and backed by its own "air ministry". The Smuts Report was approved by the War Cabinet on 24 August 1917.

Find and read : Sir Frederick Sykes, *From Many Angles: An Autobiography*

22 September 1917 : RFC Flight Lieutenant Norman Ashley Magor of Montreal, flying an H-12 attacks surfaced German submarine UB-32 in the North Sea, dropping two 104-kilogram bombs from an altitude of 240 metres; they exploded just behind the conning tower. UB-32 submerges, leaving a quantity of wreckage on the water - See more at: <https://legionmagazine.com/en/2016/02/the-first-air-war-at-sea/#sthash.af5DtQi1.dpuf>

28 Sept 1917 : Flight Lieutenant Basil D. Hobbs of Sault Ste. Marie, Ontario lying an H-12 attacks surfaced German minelaying submarine UC-6 in the North Sea, dropping a 104-kilogram bomb from an altitude of 180 metres; coring a direct hit on the stern with a 104-kilogram bomb. The flying-boat crew observed a large tear in the hull. Hobbs dropped another bomb, which exploded five metres off the bow. His target was sinking as he left for base - See more at: <https://legionmagazine.com/en/2016/02/the-first-air-war-at-sea/#sthash.af5DtQi1.dpuf>

October 1917 : Handley Page begin design work on the V/1500 long range bomber. 15 are built by war's end.

December 1917 : Handley Page employs 1120 workers. (2500 by 1919)

21 December 1917 : UK : an "Air Council" is set up by an Order in Council with Lord Rothermere (a newspaper magnate) as Secretary of State for Air.

November 1917 : Canadian Aeroplanes Limited employs 2,400 people and produces more than 50 aircraft a week. Valued at nearly 14 million dollars, the aircraft produced were mostly "slightly modified Canadian Curtiss JN-4s. (The total number of JN-4s produced is estimated at 1,210 complete planes plus parts equal to about 1,600 more; 30 Felixstowe F-5 flying boats designed by Commander John C. Porte of the Royal Navy were also built by Canadian Aeroplanes Limited for the American government in 1918-19. Production is so efficient that \$1,000 profit is made on each plane. The US version of the "F-5" utilised Liberty engines, which were noted by the letter "L" in its' type designation.

138 F-5Ls were produced by the United States Navy's Naval Aircraft Factory:  
60 by Curtiss, and  
30 by Canadian Aeroplanes of Toronto. .

In April 1919, one of these (Canadian Aeroplanes of Toronto?) F-5L flying boats, flown by Lieutenant H. B. Grow, set a flight endurance record of 20 hours and 19 minutes. Incidentally, George Page, a rather well-known individual in the US aviation industry, who solo'd in 1913, was one of the first to fly scheduled routes to foreign destinations as a pilot for American Trans-

## Notes on "Civil Aviation"

Oceanic [1920-21], and became Director of Engineering for the entire airplane division of the Curtiss-Wright Corporation in 1943. From his headquarters in St. Louis, George Page designed some sixty aircraft for the company including the C-46 "Commando".

1917-18 : Toronto Canada : Royal Army's Royal Flying Corps (later Royal Air Force) "Canada scheme" (Programme). The British Army's RFC and the Imperial Munitions Board established a recruitment system, an aircraft factory, and a network of bases in 1917 that trained pilots and observers and kept everything in running order. It was essentially a British operation in Canada—senior officers were all British—although the system was increasingly manned by Canadians, many of them veterans of the 1916-17 air campaigns deemed un-fit for combat. By November 1918, some 60 per cent of the instructors and 12 of the 16 training squadron commanders were Canadians. Major Albert Godfrey of Killarney, Man., commanded the prestigious School of Aerial Fighting at Beamsville, Ont. - See more at: <https://legionmagazine.com/en/2015/06/canadian-flyers-go-to-war/#sthash.Nujh0vay.dpuf>

December 1917 : Hugh Trenchard is appointed Chief of the British Imperial Air Staff, UK Air Ministry.

1917 : England : a British Handley-Page machine carried a pilot and 20 passengers to a height of 7,180 feet and another had travelled from London to Constantinople carrying 6 ¼ tons of freight

1917 : The Sopwith Snipe, the most powerful and advanced of the British Sopwith rotary-engine fighters, was intended as a replacement for the famous Sopwith Camel. It would undoubtedly have enjoyed the success of the Camel as a fighter but its wartime career was curtailed by the signing of the Armistice. It continued to serve as a fighter with the Royal Air Force (RAF) until 1926.

The Canadian ace Major W.G. Barker of Dauphin, Manitoba won his Victoria Cross flying Snipe Serial No. E8102 in one of the most spectacular air battles of WW 1, fought over Foret de Mormal near Valenciennes. William George Barker was born in Dauphin, Manitoba, in November 1894. He initially joined the Canadian Mounted Rifles and fought in the Second Battle of Ypres. When "Willy" first transferred to the RFC he went as a mechanic, but flew several missions as a machine gunner. In April 1916 he was commissioned as a Lieutenant observer and in late 1916 he returned to England for pilot training.

Witnessed by hundreds of ground troops, Barker, badly wounded and against overwhelming odds, managed to down 4 enemy aircraft before crash landing behind British lines.

The fuselage of Barker's VC winning Snipe is part of the National Aviation Museum's collection and is on display at the Canadian War Museum.

Only 9 Junkers W34 were imported to Canada due to the high cost of its metal construction and the heavy tariff imposed on German aircraft.

Canadian Airways was the primary Canadian operator.

A Junkers W34 was the first east-west trans-Atlantic flight in 1928. It landed on Greenly Island in Labrador after a 37-hour flight.

1950 : CF-ATF 1960 enters storage. construction number 2718 manufactured in 1931 had been and operated by various Canadian operators.

1962 Junkers W34 CF-ATF was flown from Kamloops, BC to the Sydney BC Air Museum. (The 1962 "Canadian" flight was the last flight of any of the Junkers F13/W33/W34 family of aircraft - anywhere!)

Much of the work to open up Canada's north in the 1920s and 1930s was performed by Fairchild FC-2s, 2Ws, and 2W-2s. FC-2W-2s flew Canada's first international passenger service between Montreal and New York.

1928, 2 Canadian Airways FC-2W-2s were the first to reach Junkers W.33 "Bremen", which crashed in the Strait of Belle Isle after the first east-to-west trans-Atlantic flight.





## Notes on "Civil Aviation"

The Fairchild's wings fold back for convenient storage, which meant that in the Arctic the airplane could be put undercover with a small snow-fence and a tarpaulin.

*The specifications of the British Government, for example, provide for two lights on the instrument board, carefully shielded from the pilot's eyes.*

Another light is placed at the bottom of the fuselage, or car of the aeroplane in case of need. This may be of service in adjusting the machinery or to operate bomb-dropping devices.

A special light shines on the compass and one portable torch is carried by each machine. If an aeroplane is not equipped with a special motor for supplying current, dry batteries are carried that may be thrown overboard when exhausted.

A single firm in the United States had orders for twenty-five large airboats to be delivered in the spring of 1917. The cheapest of these cost \$8500 while the more sumptuously fitted craft sold for \$10,000.

The sport, by the way, is likely to be expensive.

A pilot familiar with the complicated engines used in these craft commands a salary of around \$4.0 a week, and the machinery must be fed only high-grade gasoline.

As late as 1914, or the year before the War, the wireless outfits were bulky affairs, weighing from three to five pounds for every mile of transmission.

The aeroplanes of that period could carry comparatively little weight so that wireless apparatus of effective range could not be taken aloft.

The system has been so perfected that to-day the wireless sets weigh only one pound for every mile of transmission, and the carrying capacity of the aeroplanes meanwhile have been greatly increased.

The first official flight to Washington was made by Congressman O. D. Bleakley, of Pennsylvania in the autumn of 1916, "driven" by Sergeant Ocker of the Flying Corps,

Mr. Bleakley took the air at Philadelphia at two thirty one afternoon, flying at an altitude of about a mile.

The distance from Baltimore to Washington was covered in twenty-five minutes, making less than three hours for the entire trip. The landing was negotiated without mishap on the polo grounds.

The congressman, who is over sixty years of age, was enthusiastic about his flight.

*"We can all remember the early days of flying when a fee of several thousand dollars was demanded by an aviator for flying a few miles.*

*Today, thousands of air-pilots are engaged in the aviation corps of many armies at small salaries.*

*It is safe to prophesy that these chauffeurs of the air may be hired within a few years at a cost of around fifty dollars a week." - U.S Congressman O. D. Bleakley - Pennsylvania*

Being called "chauffeurs of the air" and the thought of getting paid "fifty dollars a week" when others of the day were naming their own price - and announcing this for all to know - for their service as a pilot more than likely ruffled a few feathers .....

Flying Corps - Canada

Since the beginning of 1917

Aeroplanes are now being manufactured in Canada for use in the war.

High class Aeroplane-Training Schools are in operation

Under an arrangement between the British and Canadian governments,

Canada has secured both extensive flying schools and airship factories.

The Imperial War Office has established Royal Flying Corps "Reserve Squadrons" in Canada to train replacement pilots in which young Canadians are being trained for service in the Imperial Army's flying corps.



## Notes on "Civil Aviation"

Canadians already serving in the Imperial Air Corps are doing so with "marked distinction".

Source : Canada's Effort IN THE GREAT WAR TO MARCH, 1917

The Imperial Munitions Board - Canada

The proportions of the business conducted by the Imperial Munitions Board:

February, 1916 : The Imperial Munitions Board - Canada:

1. employs a head office staff of 150, and
2. 2,300 factory, machine shop and testing inspectors.
3. engages 454 firms in the production of shell parts and explosives and in their assembling and loading.

March, 1917 : The Imperial Munitions Board - Canada:

1. employs a head office staff of 700, and
2. 4,000 factory, machine shop and testing inspectors.
3. Has, With financial assistance from the Canadian Government, erected important aeroplane factories at Camp Borden and other points.
4. engages 630 firms from Halifax, NS to Victoria, BC employing upwards of 200,000 persons in the production of shell parts and explosives and in their assembling and loading. The weekly expenditure is \$5,000,000.
5. keeps all firms engaged and working under a comprehensive plan to avoid confusion and waste. **The task of supervision is a heavy one.**

Source : Canada's Effort IN THE GREAT WAR TO MARCH, 1917

The "Canadian" Munitions Resources Commission [Colonel Thomas Cantley - Chairman]:

1. has contributed greatly towards the pronounced success of the Munitions business in this country.
2. has had the supply of raw materials for the manufacture of munitions constantly under review and its activities have, therefore, proved substantially useful to the Canadian public as well as to the cause of the Allies.
3. has taken early steps to furnish the industry with the necessary quantity of tool steel or high speed steel.
4. After circularizing the domestic munition makers, made arrangements with the British Ministry of Munitions for an adequate supply of [tool steel or high speed steel] an essential material.
5. is promoting the production of tool steel within the Dominion.

Source : Canada's Effort =IN THE GREAT WAR TO MARCH, 1917

**1917 BRITISH WAR CABINET REPORT**

The period began with a reconstruction of the administrative machinery at the War the centre. It had become increasingly evident that Reore-ani \*^® older system under which the supreme direction sation. ^ ^ ^ ^ ^ war rested with a Cabinet consisting of the departmental chiefs under the Chairmanship of the Prime Minister, was not sufficiently prompt and elastic for the conduct of a war which involved the mobilisation and direction of the resources not only of the United Kingdom but of the British Empire.

Even the formation of a smaller Cabinet Committee of the departmental Ministers chiefly concerned in the war did not meet the needs of the case. With the advent of the new Government, a modification was introduced whereby the supreme direction of the war was entrusted to a small War Cabinet, freed from all administrative duties, and yet in the closest touch with all departmental Ministers, while administrative responsibility was placed in the hands of Ministers who were left free to devote their whole time to this aspect of governmental work.

By this arrangement the War Cabinet were able to give all their attention to the task of co-ordination and direction, and so make more effective use of the immense resources which the Empire had gradually produced during the preceding years. It also made it easier to create a number of much needed new "administrative departments".

The most important of these departments were:

1. the Ministry of Shipping,
2. the Ministry of Labour,
3. the Ministry of Food, and
4. the Ministry of Pensions,

to which were added at later dates:

5. the Ministry of Reconstruction ,
6. the Ministry of National Service, and
7. the Ministry of the Air.

## **ADMINISTRATIVE ORGANISATION**

### **A. The War Cabinet.**

The most important constitutional development in the United Kingdom during the last year has been the introduction of the War Cabinet system.

This change was the direct outcome of the war itself. As the magnitude of the war increased, it became evident that the Cabinet system of peace days was inadequate to cope with the novel conditions.

The enlarged scope of Government activity and the consequent creation of several new departments, made a Cabinet, consisting of all the Departmental Ministers meeting under the Chairmanship of the Prime Minister, far too unwieldy for the practical conduct of the war.

It was extremely difficult for so large a body to give that resolute central direction which became more imperative the more the population and resources of the nation had to be organised for a single purpose—the defeat of German militarism. Even the development of a comparatively small War Committee did not entirely meet the needs of the case, as the final responsibility rested not with them but with the Cabinet.

With the change of government, therefore, a new method of governmental organisation was introduced.

The system of the War Cabinet distinguishes between:

1. the body, which is responsible for the supreme direction of the war, and
2. the Ministers, who have charge of the great administrative departments of State.

The general direction of the policy of His Majesty's Government during the war rests with the War Cabinet, whose members with one exception, are relieved of the day to day pre-occupations of administrative work, and whose time is, therefore, entirely available for initiating policy and for the work of co-ordinating the great Departments of State.

The introduction of the War Cabinet system has resulted in considerable modifications of the administrative system of the Government. In the first place, it freed the various departmental Ministers from the constant necessity which rested upon them under the old Cabinet system of considering those wider aspects of public policy which often had nothing to do with their

## Notes on "Civil Aviation"

departments, but for which they were collectively responsible.

They are, therefore, now able to devote a far larger part of their time to those administrative duties, which have become more exacting as the national activities have expanded under the pressure of the war. Secondly, it has made possible an increase in the number of Ministerial offices so as to effect a better distribution of functions.

The new Ministries created since the introduction of the War Cabinet are:

the Ministry of Labour,  
the Ministry of Shipping, the Ministry of Food, the Ministry of the Air, the Ministry of National Service, the Ministry of Pensions and the Ministry of Reconstruction.

It has been felt for some time that, in view of the ever increasing part played by the Dominions in the war, that it was necessary that their Governments should not only be informed as fully as was possible of the situation, but that, as far as was practicable, they should participate, on a basis of complete equality, in the deliberations which determined the main outlines of Imperial policy.

Accordingly, one of the first acts of the new Government was to send a telegram on December 14th inviting the Dominion Prime Ministers, not to an ordinary Imperial Conference but to a Special War Conference of the Empire, in the following terms :

" They therefore invite your Prime Minister to attend a series of special and continuous meetings of the War Cabinet in order to consider urgent questions affecting the prosecution of the war, the possible conditions on which, in agreement with our Allies, we could assent to its termination, and the problems which will then immediately arise. For the purpose of these meetings, your Prime Minister will be a member of the War Cabinet."

Canada was represented by:

1. the Prime Minister, Right Hon. Sir Robert Borden, and
2. the Minister of the Overseas Military Forces, Hon. Sir George Perley,

They were accompanied by:

3. the Minister of Public Works, Hon. Eobert Eogers, and
4. the Minister of Marine Fisheries and Naval Service, Hon. J. D. Hazen,...

For the first time in the history of the British Empire there were two Cabinets sitting in London, both properly constituted and both exercising well-defined powers.

One Cabinet, designated the 'War Cabinet' chiefly devoted itself to such questions touching the prosecution of the war as primarily concerned the United Kingdom.

The other Cabinet, designated the 'Imperial War Cabinet' has a wider purpose, jurisdiction and personnel.

The Prime Minister of the "United Kingdom" presides over each of them.

Air Board.

The Derby Committee was followed by a decidedly more definite step in the direction of co-ordination with the appointment of the first Air Board in May, 1916, under the Presidency of Lord Curzon.

On this Board the Army Council and the Board of Admiralty were directly represented in the persons of"

1. Sir David Henderson (then Director-General of Military Aeronautics), and
2. Rear-Admiral (now Sir) F. C. Tudor, then Third Sea Lord.

The Air Board differed from the preceding Committees in intention, composition and duties, which were intended to be considerably wider in scope than those of a mere mediator between the two services in matters of supply.

The Air Board was empowered:

1. to discuss matters of policy "in relation to the air",
2. to make recommendations to the Admiralty and War Office, and,
3. in the event of those Departments declining to act upon its recommendations, to refer the matter to the War Committee.

It was further announced in the House of Lords by Lord Curzon that the Air Board would review, among other questions:

1. the possibility (which had been mooted at the time of the appointment of the Derby Committee) of the amalgamation of the supply and design branches of the two services, as well as

## Notes on "Civil Aviation"

2. in the further background, the desirability or possibility at a future date, of creating a single Department under a single Minister.

The first Air Board thus possessed a far wider ambit of suggestion than either of the two earlier Committees, and it enjoyed the superior prestige attaching to it from the Presidency of a Cabinet Minister who was also a member of the War Committee. No executive functions were, however, attributed to the Air Board.

The next stage was reached with the formation of the second Air Board under the New Ministries and Secretaries Act, 1916, following upon a report by Lord Curzon to the War Committee, in which a considerable extension of the powers of the Board was recommended.

Lord Curzon had retired from the Presidency of the Air Board upon his becoming a member of the War Cabinet under the Premiership of Mr. Lloyd George, and he was succeeded on the board by Lord Cowdray in January, 1917.

A month later the Air Board was able to submit for the approval of the War Cabinet a draft of the Charter defining its functions and duties which, after discussion, had been settled with the Admiralty and the War Office as follows:

1. The Director of Naval Air Services was given a seat on the Board of Admiralty as Fifth Sea Lord, and
2. the Ministry of Munitions was made responsible for the supply of :
  1. all heavier-than-air craft for both services
  2. all heavier-than-air craft engines for both services
  3. the supply of all heavier-than-air craft accessories for both services,
3. in accordance with the aerial policies determined by the services in concert with the Air Board, the Air Board became responsible for:
  1. the design of the aircraft between the two services, and
  2. for the allocation of the aircraft between the two services.

Two members of the Ministry of Munitions were added to the Board:

1. the Controller of Aeronautical Supplies and
2. the Controller of Petrol Engines.

In February 1917, the Departments of the Controller of Aeronautical Supplies, of the Director-General of Military Aeronautics, and of the Director of Naval Air Services were transferred to the Air Board Office.

The various authorities concerned with aviation were thus for the first time housed under one roof.

Such an arrangement (though subsequent developments have led to the occupation of other adjacent buildings) was clearly of a nature to facilitate the amalgamation not only of the departments of design and supply but also of the combatant services themselves if events proved such a measure to be desirable.

It is now necessary to discuss the factors which led to the transformation of the second Air Board into the fully equipped and independent - Ministry which is, at the date of the Report, in course of organisation.

At the time of the formation of the second Air Board, the requirements of the two services in the matter of aircraft were far from satisfied, and during the first six months of its existence the whole of its energies were devoted to increasing supply in order to meet those requirements.

By the middle of the summer of 1917 the situation had improved so much that the Board was in a position not only to look forward to the day when the needs of the two services would have been met but also to anticipate the creation of a substantial surplus of aircraft beyond those needs. It then became necessary to take measures for the utilisation in the most effective manner of these additional aircraft.

This gave rise to "questions of policy" which the Board, constituted as it was, was unable to solve. An Air War Staff became a necessity in order to consider problems of aerial offensive and defensive distinct from those connected with the operations of the army and the navy. The need for such a body was pointed to by the obviously increasing importance of these problems.

The speed, range and carrying capacity of aircraft were reaching a stage of development almost unsuspected at the beginning of the war. It was possible to envisage from the results of bombing operations already practised on lines of communication and other places behind the enemy's lines the effect which the extension of these operations might have upon the determination of

## Notes on "Civil Aviation"

a struggle which, as regards the conflicts of the opposing armies on the western front threatened to reach, if not a deadlock, at all events a condition where victory might only ensue by a long and costly process of attrition.

From the point of view of defence, the new arm of His Majesty's forces presented problems pregnant with at least equal importance. The proud and ancient inviolability of these islands was being challenged in a new and startling fashion, and the seriousness of the problem was added to by the fact that the geographical position of the capital of the Empire rendered it particularly inviting to attack from the air. The menace of the lighter-than-air craft seemed in a fair way to be overcome, but it was clear that the possibilities of attack by bomb-carrying aeroplanes were not yet either measured or mastered, and any arguments based on the assumption that the uses of aircraft were purely ancillary to military or naval operations were being refuted by the logic of fact and experience.

The Air Board, however, possessed neither the staff nor organisation to enable it to cope with these problems. The President of the Air Board was without that body of technical advice which alone would enable him to form a correct judgment as to the relative importance of the different methods of employing aircraft.

For technical advice of this kind he could look only to the naval and military members of the Board who sat there mainly as representatives of the Board of Admiralty and of the Army Council.

These considerations led to Lord Cowdray's addressing, on July 28th, 1917, to General Smuts (as the member of the War Cabinet charged with the general supervision of air matters) his view that the Air Board should be turned into a permanent Ministry, that it should have a War Staff to consider the best use to be made of aircraft not needed directly by the operations of the army and the navy, and that the surplus aircraft should be considered a distinct unit from the air contingent attached to the Expeditionary Force.

On August 24th the War Cabinet decided to accept in principle the establishment of an Air Ministry, and also decided that a further Committee should meet at once to work out a "scheme" (Programme) for giving effect to this decision. This body consisted, under the chairmanship of General Smuts, of representatives of the Admiralty, War Office, Treasury and Air Board, and was known as the Air Organisation Committee. The appointment of the Air Organisation Committee was a necessary administrative corollary to the decision taken by the War Cabinet on the question of principle.

The absorption of the two branches of the air service into a "single service" would at any time have been a matter of complexity, and the task was one of which the delicacy was enhanced by the fact that it was to be brought about in the middle of a great war and at a time when those concerned in the amalgamation were carrying a burden of responsibility and administrative work, the daily performance of which could suffer no interruption or delay.

It was essential, therefore before any legislative action was initiated that the ground to be covered should be carefully plotted out, and this was the task which fell to the Air Organisation Committee.

The nature of its inquiries may be indicated under the following statement of some of the questions which were dealt with :

1. the legislation needed for the establishment of an Air Force and of an Air Council to administer it ;
2. the constitution of the Council, its membership and the appointment of duties between the members ;
3. the organisation of the Air Ministry and the duties of its officials;
4. the question of supply in all branches, the rates of pay, conditions of service and pension allowances, the relation between the Air Ministry and Air Force and the War Office and Admiralty and Army and Navy ;
5. the preparation of King's Regulations and other matters relating to discipline etc.

On the majority of these questions the Air Organisation Committee was able to arrive at an agreement with the departments concerned. It is, however, only right (if a just perspective is to be maintained) to emphasise the importance of the contribution to the unification of the two services which had been made when their headquarters' staffs became housed under one roof.

The opportunities for daily conference on almost every subject of aeronautical administration which naturally ensued—together with the link provided by a joint system of supply and design—was probably an essential preliminary to the task of unification.

The Ministry of Air.

Following upon the discussions of the Air Organisation Committee, the Air Force Bill was introduced into the House of Commons in November 1917., It met with no opposition of principle in either House and received Royal Assent on November 29th.

## Notes on "Civil Aviation"

The "scheme" (Programme) of the Air Force Act contemplates that "*the whole of the personnel and equipment of the R.F.C. and R.N.A.S. should be in due course absorbed by the Air Force under the control of an Air Council presided over by a Secretary of State and exercising functions analogous to those of the Army Council.*"

**NOTES:** Similar to the UK, the Canadian Department of Militia and Defence was responsible for Canadian Army purchases and the Department of Naval Service, for those of the Royal Canadian Navy (RCN).<sup>92</sup>

In May 1915, a War Purchasing Commission responsible to the Privy Council was appointed to oversee all Canadian war purchases as well as all contracts placed by international allies with businesses and industries across Canada, except for those of the British government that fell within the scope of the Shell Committee and its successor, the Imperial Munitions Board. The creation of the War Purchasing Commission allowed the Canadian government to control and coordinate defence procurement and war production in Canada more effectively and efficiently.<sup>93</sup>

### 2.3 The Imperial Munitions Board (1915–1919)

In November 1915, the Shell Committee was replaced by an Imperial Munitions Board directly responsible to the British Ministry of Munitions. It coordinated all British government orders in Canada for foodstuff, strategic raw materials, and manufactured products, including war materiel. The Imperial Munitions Board completely reorganized the Canadian industrial war effort and operated its own network of "national factories" to furnish any products that private companies were unable to produce. Canadian war production expanded significantly under its leadership. When the war ended in November 1918, more than 675 factories across Canada had worked on Imperial Munitions Board contracts.<sup>94</sup>

## 3 The Interwar Years, 1919–1939

### 3.1 Return to Pre-War Procurement Practices (1919–1939)

In Canada, the centralized system of procurement and war production set up during the First World War was abandoned in 1919 with the dissolution of the War Purchasing Commission and the Imperial Munitions Board. The Canadian Departments of Militia and Defence and of Naval Service became, once again, independently responsible for Canadian Army and RCN procurement, respectively.

The Canadian Air Board established in 1919 (*renamed "the Royal Canadian Air Force", or RCAF, in 1924*<sup>95</sup>) was responsible for its own purchases.<sup>96</sup>

In 1923, the Canadian National Defence Act came into effect, amalgamating the Canadian Department of Militia and Defence, the Department of Naval Service, and the Air Board into a new Department of National Defence (DND). The amalgamation was effected for reasons of economy and to improve the coordination of defence policy in Canada.

While the establishment of DND brought Canada's army, navy, and air force together under a single minister, the three armed services remained separate and independent legal entities, with their own chiefs of staff, headquarters, budgets, human resources, and procurement practices.<sup>97</sup>

When Canada declared war on Germany on 10 September 1939, the Mackenzie King government decided to further centralize defence procurement and production under a separate federal government department with its own minister and much wider powers than the pre-war Defence Purchasing Board. The Department of Munitions and Supply Act, passed by the Canadian Parliament on 12 September 1939, provided for the eventual establishment (when it was deemed necessary) of a new

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<sup>92</sup> <https://lop.parl.ca/Content/LOP/ResearchPublications/2016-09-e.html?cat=international>

<sup>93</sup> War Purchasing Commission, *Report of the War Purchasing Commission*, Vols. 1–6, King's Printer, Ottawa, 1916–1919

<sup>94</sup> David Carnegie, *The History of Munitions Supply in Canada, 1914–1918*, Longmans, Green and Company, London, 1925.; and H. H. Vaughan, *The Manufacture of Munitions in Canada*, Engineering Institute of Canada, Ottawa, 1919

<sup>95</sup> <https://lop.parl.ca/Content/LOP/ResearchPublications/2016-09-e.html?cat=international>

<sup>96</sup> Department of Naval Service, Report of the Department of Naval Service for the Fiscal Year Ending March 31, 1919, King's Printer, Ottawa, 1920, pp. 9 and 18; Department of Naval Service, Report of the Department of the Naval Service for the Fiscal Year Ending 31 March 1920, King's Printer, Ottawa, 1920, pp. 29–31; Department of Militia and Defence, Report of the Department of Militia and Defence for the Fiscal Year Ending March 31, 1920, King's Printer, Ottawa, 1921, pp. 18–20; and Report of the Air Board for the Year 1920 in Sessional Papers of the Parliament of Canada 1921, Vol. 9, King's Printer, Ottawa, 1921, p. 21

<sup>97</sup> Department of National Defence (DND), Report of the Department of National Defence for the Fiscal Years Ending March 31, 1923, King's Printer, Ottawa, 1923; and DND, Report of the Department of National Defence for the Fiscal Years Ending March 31, 1924, King's Printer, Ottawa, 1924

## Notes on "Civil Aviation"

"Department of Munitions and Supply" that would direct the purchase, production and distribution of Canadian defence products.<sup>98</sup>

In the interim, a Canadian "War Supply Board" responsible to the Minister of Finance was created by order in council on 15 September 1939 and replaced the Defence Purchasing Board on 1 November 1939. The powers of the War Supply Board extended beyond those of the Defence Purchasing Board and included the mobilization and organization of Canadian industry for the war effort. It was also empowered to coordinate all defence contracts placed by the British and French governments in Canada. Responsibility for the War Supply Board was eventually transferred to the Minister of Transport, on 23 November 1939.<sup>99</sup>

[END of NOTES <sup>100</sup>]

It was fortunately not necessary to provide the new force with a complete and original code of administration co-extensive with the codes by which the Navy and Army are governed and which are made up of an accretion of centuries of experience. The actual administration of the Air Force would clearly offer many analogies to that of the Army, and it was found practicable to adopt with modifications the Army (Discipline) Act to regulate the discipline of the Air Force. (Change the KR&O for the "Army" to read as KR&O for the "Air Force" and replace every instance of the word "Army" with the words "Air Force" and Bob's your Uncle!)

Similarly, the Crown is empowered by Section 13 of the Air Force (Constitution) Act to *apply, with any necessary modifications to the Air Force, any of the various enactments relating to the powers, rights and duties of the Army or of its officers and men*. It was not to be expected that the new department could spring forth fully armed from the decisions of the Legislature.

The provisions of the Air Force (Constitution) Act represented the fruits of a careful preliminary exploration by the Air Organisation Committee, but there remained important steps in the detailed organisation of the new Force which could not be undertaken until the Bill became law.

One of the first steps in reorganisation was a readjustment of the positions of the Technical Department of the Air Board, which was responsible for the design of aircraft, and the Aeronautical Supply Department, under the Ministry of Munitions, which was under the charge of Sir William Weir, who was also a member of the Air Board. These changes, made when the Air Force Bill became law, unified the functions of the two Departments.

The next step was to set up the Air Council and to define the duties of its members. This was done by "Orders in Council" issued December 21st, 1917 to set up the Air Council, and on January 2nd, 1918 to define the duties of its members.

On January 2nd, 1918 Lord Rothermere (who had been appointed President of the Air Board on November 23rd, following Lord

Cowdray's resignation) was appointed Secretary of State for Air.

The appointments of the other members of the Air Council were announced at the same time :

Lieutenant-General Sir David Henderson, K.C.B. (additional member and Vice-President) ;

Major-General Sir Hugh Trenchard, K.C.B. (Chief of the Air Staff) ;

Kear-Admiral Mark Kerr, C.B. (Deputy-Chief of the Air Staff) ;

Commodore Godfrey Paine, C.B. (Master-General of Personnel) ;

Major-General W. S. Brancker (Comptroller-General of Equipment) ;

Sir William Weir (Director-General of Aircraft Production in the Ministry of Munitions) ;

Sir John Hunter, K.B.E. (Administrator of Works and Buildings);

Major J. L. Baird, C.M.G., D.S.O., M.P. (Parliamentary Under-Secretary of State).

The Air Council was now engaged, in consultation with the Admiralty and the War Office and other Departments concerned, in completing arrangements preparatory to the assumption of full administrative and executive responsibilities.

It is convenient here to refer to two matters in which some misunderstanding may have existed as to the seat of responsibility:

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<sup>98</sup> House of Commons, *Debates*, 5<sup>th</sup> Session, 18<sup>th</sup> Parliament, 12 September 1939, pp. 132–133 and 171–181

<sup>99</sup> Stacey (1970), p. 496; Kennedy (Vol. 1, 1950), pp. 4–6; and Department of Munitions and Supply Quarterly Summary, 1 January to 31 March 1940, Department of Munitions and Supply, Ottawa, 15 May 1940, pp. 1–3

<sup>100</sup> For additional info on the Ministries within Canada during WW1 see: <http://guide-ministries.canada.ca/dtail.asp?lang=eng&mstyd=10&mbtpid=1>



## Notes on "Civil Aviation"

- (1) Home defence against air raids.
- (2) The control of lighter-than-air craft.

The former is under the control of the Field-Marshal Commanding the Home Forces, and the Air Council is not responsible for it. Aircraft, anti-aircraft guns and searchlights for the defence of London have been united under the immediate command of a single General Officer.

Elsewhere in the United Kingdom the guns and lights are under the local General Officer Commanding-in-Chief, while the aircraft has been grouped under the General Officer Commanding a Brigade.

Section 3 of the Air Force Constitution Act, however, provides that units of the naval or military forces engaged in defence against aircraft may, by arrangement with the Admiralty or Army Council, be attached to the Air Force. The foregoing refers mainly to aeroplanes and seaplanes, the airship, and to a lesser extent, the kite balloon, having been administered on somewhat different lines. (•2) Up to the end of December, 1912, the Army and the Navy had both been experimenting with airships, but at that date the Army Council decided to relinquish this work, and, consequently, the military airships and personnel were transferred to the Admiralty on the 1st January, 1913, and henceforth airships were experimented with and administered solely by the Admiralty.

At the outbreak of war there were only five small airships in existence, and little progress was made until March, 1915, when the first S.S. (Submarine Scout) type airship was produced and a programme embarked upon. Since March, 1915 considerable development has taken place and non-rigid airships form an important part of the anti-submarine measures, while rigid airships are being constructed by the Admiralty with a much wider range of action than is possible for the smaller non-rigid air craft.

On the formation of the Air Force, though the principle was agreed to that ultimately airships should be transferred to the new authority, it was decided that until this branch of the service had become settled on a more solid foundation the responsibility for the design, production and administration should remain with the Admiralty. Admiralty personnel will be transferred to the Air Force while remaining with the Admiralty for production and administrative purposes. The kite balloon was originally taken up by the Navy in March, 1915, and their example was followed by the Army, whose first three land sections in France were manned by naval personnel.

It was later arranged that the second Air Board should be responsible for the whole of the supply of R.F.C. requirements, though the Admiralty remained responsible for the provision of a considerable portion of the demands for naval kite balloons. On the formation of the Air Force the whole responsibility for kite balloons will pass to the new body.

Reference should be made to some of the organisations subsidiary to the central authority whose evolution has been traced in the preceding paragraphs.

### Inventions.

The administrative separation of the two branches of the service reflected itself in the arrangements for dealing with aeronautical inventions, the consideration of which was divided between:

1. the Board of Invention and Research under the Admiralty,
2. the Munitions Inventions Department under the Ministry of Munitions, and
3. the Directorate of Military Aeronautics under the War Office.

This division of responsibility possessed obvious disadvantages in a matter where the co-ordination of all sources of knowledge and experiment was of prime importance, and one of the duties with which the first Air Board was charged was the organisation of a system of further interchange of ideas on air problems between the two services.

Proposals to this end were put forward by Lord Curzon without securing acceptance from some of the parties whose concurrence was essential, and a settlement of the problem was not reached until the middle of 1917, when an "Air Inventions Committee" was appointed by Lord Cowdray, to which was transferred all duties in connection with the examination of inventions relating to heavier-than-air craft. This Committee works in close cooperation with the Advisory Committee on Aeronautics.

### Civil Aviation.



## Notes on "Civil Aviation"

A Committee known as the Civil Aerial Transport Committee was appointed in April, 1917, under the chairmanship of Lord Northcliffe to consider :

1. "The steps which should be taken with a view to the development and regulation, after the war, of aviation for civil and commercial purposes, from a domestic, an Imperial, and an international standpoint", and
2. "The extent to which it will be possible to utilise for the above purposes the trained personnel and the aircraft which the conclusion of peace may leave surplus to the requirements of the naval and military air services of the United Kingdom and Overseas Dominions."

The Committee at the outset divided its enquiry into five branches and entrusted each to a special sub-committee, as follows :

1. Questions of law and policy.
2. Technical questions as to the performance of aircraft and the requirements of aerial services.
3. Business questions relating to the position of the aircraft manufacturing industry after the war.
4. Labour questions.
5. Problems of research and education.

Reports by all the five Sub-Committees have been drawn up and are now under consideration by the Main Committee.

### Medical Research

A Medical Research Committee, appointed in March, 1917, has performed valuable services to the investigation of the various physiological phenomena produced by flying at high altitudes and kindred subjects. It has been found by experience that flying men are subject to many peculiar disabilities, and considerable progress has been made in the methods of prevention and cure of these disabilities.

### Supply of Aircraft.

The above recital indicates generally what steps have been taken in matters of administration and control. It should be supplemented by some general account of the measures taken as regards supply of aircraft and the development of that supply.

In endeavouring to describe the measures taken to meet the aircraft needs of the Navy and Army, the writer is at once confronted

by the fact that *the information desired by the country is precisely the information desired by the enemy.*

What the country wants to know is:

1. what has been the expansion in our Air Services ;
2. whether we have met and are meeting all the demands of the Navy and of the Army, both for replacement of obsolete machines by the most modern types and for the increase of our fighting strength in the air ;
3. what proportion of the national resources in men, material and factories is being devoted to aviation ;
4. what the expansion is likely to be in the future.

These are precisely the facts which we should like to know with regard to the German air service, and for that reason it would be inadmissible for us to supply Germany with corresponding information about ourselves by publishing a statement on the subject.

It can be said that the expansion of our Air Services is keeping pace generally with the growing needs of the Navy and the Army.

The brilliant part played by the Royal Flying Corps and the Royal Naval Air Service in the battles of the Somme, Vimy, Messines and Ypres has been described by the Commander-in-Chief, who has also borne frequent testimony to the inestimable value of the work performed daily and nightly by the two air services. It is fair to say that not even the well-known superiority of our airmen over those of the enemy would have enabled them to have earned the Commander-in-Chief's praise in so unstinted

a measure unless they had been supplied with satisfactory machines and equipment from home. It is rather the fashion to criticise the quality of our machines. Most of the critics, however, are ignorant of the technical and manufacturing difficulties which have to be overcome in order to keep up a constant and increasing supply of the most up-to-date machines.

Not only are the technical difficulties and the resultant research and experimental work formidable in themselves, but the task of building up in war time, without seriously affecting the requirements of other services, a new industry of a most highly skilled character necessarily puts a heavy strain upon the organising and manufacturing ability of the country.

The growing realisation of the increasing importance of aviation as an artificer of victory has recently been reflected by the concession of first priority to labour and materials required for aircraft production.

## Notes on "Civil Aviation"

The nature of the duties performed by the Royal Naval Air Service, both in conjunction with the fleet and from naval bases, makes secrecy essential to success. It is, unfortunately, inevitable, therefore, that the public should remain in the dark on this subject; but the Germans, who in this matter are perhaps the best judges, have good reason to know and to regret the great and growing activities of the Royal Naval Air Service. All that has been said regarding the difficulties of supplying the requirements of the Air Forces operating over the land applies equally to the supply of those which operate over the sea. In both cases difficulties are being overcome and the outlook is improving.

The science of aeronautics is in a state of constant and rapid development; improvements in engines, aeroplanes and their numerous accessories are constantly being worked out. But the interval between the discovery of an improvement and its introduction into the service is, owing to technical considerations, very much longer than is commonly supposed. Experience shows that, as a rule, from the date of the conception and design of an aero-engine to the delivery of the first engine in series by the manufacturer, more than a year elapses; the corresponding period for an aeroplane is about one half as long. Consequently, plans have to be laid for a long period ahead, and these plans are liable to be upset by many uncertain factors. The hopes based upon the promising results given by the first experimental engines of a new design are frequently disappointed owing to difficulties of bulk manufacture or to defects only developed after long trial in the air; new types of aeroplanes favourably reported on when first tried are found on longer experience not to give complete satisfaction, and yet it is impossible, if we are to keep ahead in the keen struggle for aerial superiority, to wait for full experience before placing orders. Risks must be run, and new types must be adopted at the earliest moment consistent with reasonable assurance that they will constitute a substantial improvement on what is already in use. Orders must be placed, moreover, for considerable numbers and for delivery over many months, as the large output required for our present flying services can only be obtained by bulk orders permitting a high degree of subdivision of work.

The next step in the problem is the balancing of the engine and the aeroplane programmes. Owing to the much longer period required for the production of engines than of aeroplanes, orders for the former must be placed for relatively long periods ahead, before it is known what types of aeroplanes will be required when the engines become available.

The problem is complicated by the fact that manufacture and delivery rarely if ever proceed in accordance with anticipation. The output of a particular type may be delayed for weeks or even months owing to some technical difficulty of manufacture.

Moreover, as replacement of losses and expansion are proceeding simultaneously in the flying services, and the rate of wastage in different types of engines and of aeroplanes varies considerably according to circumstances, it is impossible to forecast with accuracy what engines will be available for the equipment of new types of aeroplanes after wastage has been made good. Nor is it possible to any great extent to adjust the programme by modifying orders once placed without disorganising supply.

The problem does not end here. Whenever a new type is introduced provision must be made for accumulating a sufficient "head of spare engines, spare aeroplanes and spare parts of innumerable kinds, to keep the squadron to be equipped with that type in a condition to make good the day-to-day wastage and carry out the constant repairs required.

Such being the nature of the problem, it is satisfactory to be able to record that during the year 1917 not only was the number of squadrons of aircraft on the various fronts increased in a notable degree, but there was a complete replacement of machines and engines of the older types.

The very great increase in output which is being obtained has placed a considerable strain on the workers in the aircraft and aero-engine factories of the country, a strain which is being met on the whole in a satisfactory manner.

The difficulties in connection with production are aggravated by the competing claims of many different types of aero-engines.

## Notes on "Civil Aviation"

Standardisation is the ideal but it is obviously difficult of attainment having in view the importance of not losing time in production and at the same time of keeping abreast with the very latest developments necessitated by the need for constant increase of horse-power and higher performance.

The Air Council are most keenly impressed by the need for concentration on a few approved engines, and they have the whole question of the reduction of numbers of types under constant and careful consideration.

Attention was drawn, on more than one occasion, by manufacturers to the importance of maintaining the interest of workers in aircraft factories in the highly important but generally monotonous work on which they are employed.

Engaged, as they frequently are, on the production by a repetition process of some small part of an aeroplane, these men and women find it difficult to realise that they are contributing effectively to one of our most valuable instruments of warfare.

It was accordingly arranged that Captain Ewart, E.F.A., well known as a writer by the name of "Boyd Cable," should visit various squadrons at the front and gather materials and photographs for lectures concerning the exploits performed with various types of aircraft for delivery to the workpeople engaged on the manufacture of those particular types.

Captain Ewart delivered several series of lectures which, judging from the reports received from the factories concerned, proved a very great success.

### Ministry of Munitions 1917 -

#### Aircraft.

The chief of the new supply functions which have fallen upon the Ministry of Munitions during the period under review is the responsibility for the provision of aircraft, the transfer of which was effected as from the 1st March, 1917.

This involved the absorption of a very large organisation and has resulted in greatly increased output. It will be remembered that this industry is almost entirely a creation of the war, most of the largest firms with which the Ministry now deals having actually been brought into existence since the outbreak of war, while further important extensions of capacity are now in progress.

When the Ministry of Shipping was formed, the Shipping Controller had taken over from the Admiralty the bulk of the work of the Transport Department of the Admiralty, and he had also assumed the responsibility for merchant tonnage construction. Merchant tonnage construction now reverted to the Admiralty.

In order to assist the Controller in his onerous duties, three new Deputy-Controllerships were created,

1. Dockyards and Shipbuilding,
2. Auxiliary Shipbuilding, and
3. Armament Production (including Aircraft).

*The design and production of all heavier-than-air aircraft, however, remained with the Air Board and Ministry of Munitions.*

The Royal Naval Air Service at the outbreak of war possessed a personnel of under 800; at the present moment the numbers approach 46,000 and are continually increasing.

Their materiel after the outbreak of war consisted of seven non-rigid airships, considerably less than 100 efficient seaplanes and aeroplanes, and no kite balloons.

At the present time there are some 176 airships and kite balloons, well over 2,500 seaplanes and aeroplanes, and a great number of motor boats and subsidiary appliances of all kinds.

Attention has been called to the work of the squadrons in Flanders. Mention must also be made of the great value of the air services in combating the submarine menace round our coasts.

## Notes on "Civil Aviation"

Here, again, detailed particulars of the services performed cannot justifiably be given, but as illustrating their extent it may be stated that in one week the aircraft patrol round the British coasts alone flies 30,000 miles.

The Royal Naval Air Service during the past year has also rendered much assistance to our armies in Macedonia, Palestine, and East Africa, and squadrons have been attached to our army on the Western Front, where they are believed to have destroyed or driven down out of control nearly 400 enemy machines during the last year.

The Commander-in-Chief, Sir Douglas Haig, has borne testimony to their efficiency and gallantry. In other fields of action, the bombing of the Turkish Fleet in the Golden Horn, in July, and the destruction of the bridge at Namur, in September, will be remembered out of innumerable gallant and heroic exploits.

Although now technically a part of the Army, and serving as a unit of the British Expeditionary Force on the Western Front, mention must be made of the Royal Naval Division, who are worthily upholding their tradition of Gallipoli, and are acknowledged to be second to none in the manner in which they carry out the duties and tasks allotted to them.

Royal Flying Corps.

To take some special services by themselves, the Royal Flying Corps has shown a very remarkable development. The number of units, for instance, formed in the past year was as large as the total number of units which had been formed previously in the whole 4 years of war.

In the matter of personnel, the number of both officers and other ranks has doubled, *the latter being largely drawn from unskilled and partially skilled workers in various metal and engineering trades.*

The increase in the supply of future flying officers is especially striking.

The monthly influx of cadets for training at Cadet Training Wings has increased tenfold, and boys too young for these are admitted to a preparatory training school.

Altogether the number of officers passing through the training squadrons as graduated pilots is more than 200 per cent, greater than it was in January, 1917. This growth in number has been achieved in spite of the fact that the length of time occupied in training has increased.

**The technical and equipment sides of the Corps have shown a similar development, the supply of aeroplanes having been doubled during the first nine months of this year.**

The importance of the work done by the Flying Corps in the field, as the eyes of our Army, can be only faintly imagined from the official communiques. These, however, show that in France, during the period mentioned, 876 enemy machines were brought crashing to the ground, and 759 others driven down out of control by our airmen, apart from invaluable services rendered in bombing the enemy's bases, locating his batteries, and taking photographs of his lines.

Aircraft.

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It will be remembered that this industry is almost entirely a creation of the war, most of the largest firms with which the Ministry now deals having actually been brought into existence since the outbreak of war, while further important extensions of capacity are now in progress.

Scarcely less pressing was the expansion of aerial warfare, and this led to the second change which finally recognised the status of the new arm by the appointment of the Director of Naval Air Services to a seat on the Board of Admiralty as Fifth Sea Lord.

## Notes on "Civil Aviation"

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Lord Curzon had retired from the Presidency upon his becoming a member of the War Cabinet under the Premiership of Mr. Lloyd George, and he was succeeded in January, 1917, by Lord Cowdray.

January 1917 : Lord Cowdray assumes presidency of the Air Board

February 1917 : the Air Board submits a draft of the Charter defining its functions and duties for the approval of the War Cabinet. The Board, after discussion, had settled with the Admiralty and War Office.

1. The Director of Naval Air Services is given a seat on the Board of Admiralty as "Fifth Sea Lord"
2. the Controller of Aeronautical Supplies - Ministry of Munitions is added to the Board
3. the Controller of Petrol Engines - Ministry of Munitions is added to the Board.
4. the supply of all heavier-than-air-craft to both services is transferred to the Ministry of Munitions
5. the supply of all engines for heavier-than-air-craft for both services is transferred to the Ministry of Munitions
6. the supply of all accessories for heavier-than-air-craft for both services is transferred to the Ministry of Munitions
7. the Air Board becomes responsible for design of all heavier-than-air craft
8. the Air Board becomes responsible for design of all engines for heavier-than-air craft,
9. the Air Board becomes responsible for design of all accessories for heavier-than-air craft,
10. the Air Board becomes responsible for the allocation of the aircraft between the two services in accordance with the aerial policies determined by the services in concert with the Air Board.

In February, the Departments of the Controller of Aeronautical Supplies, of the Director-General of Military Aeronautics, and of the Director of Naval Air Services were transferred to the Office of the Air Board.

The various British authorities concerned with aviation were thus for the first time housed under one roof.

Such an arrangement (though subsequent developments have led to the occupation of other adjacent buildings) was clearly of a nature to facilitate the amalgamation not only of the departments of design and supply but also of the combatant services themselves if events proved such a measure to be desirable.

It is now necessary to discuss the factors which led to the transformation of the second Air Board into the fully equipped and independent Ministry which is, at the date of the Report, in course of organisation.

## Notes on "Civil Aviation"

At the time of the formation of the second Air Board, the requirements of the two services in the matter of aircraft were far from satisfied, and during the first six months of its existence the whole of its energies were devoted to increasing supply in order to meet those requirements.

By the middle of the summer of 1917 the situation had improved so much that the Board was in a position not only to look forward to the day when the needs of the two services would have been met but also to anticipate the creation of a substantial surplus of aircraft beyond those needs.

It then became necessary to take measures for the utilisation in the most effective manner of these additional aircraft. This gave rise to questions of policy which the Board, constituted as it was, was unable to solve.

An Air War Staff became a necessity in order to consider problems of aerial offensive and defensive distinct from those connected with the operations of the army and the navy. The need for such a body was pointed to by the obviously increasing importance of these problems. The speed, range and carrying capacity of aircraft were reaching a stage of development almost unsuspected at the beginning of the war. It was possible to envisage from the results of bombing operations already practised on lines of communication and other places behind the enemy's lines the effect which the extension of these operations might have upon the determination of a struggle which, as regards the conflicts of the opposing armies on the western front threatened to reach, if not a deadlock, at all events a condition where victory might only ensue by a long and costly process of attrition.

From the point of view of defence, the "new arm" of the service presented problems pregnant with at least equal importance.

The proud and ancient inviolability of these islands was being challenged in a new and startling fashion, and the seriousness of the problem was added to by the fact that the geographical position of the capital of the Empire rendered it particularly inviting to attack from the air.

The menace of the lighter-than-air craft seemed in a fair way to be overcome, but it was clear that the possibilities of attack by bomb-carrying aeroplanes were not yet either measured or mastered, and any arguments based on the assumption that the uses of aircraft were purely ancillary to military or naval operations were being refuted by the logic of fact and experience. The Air Board, however, possessed neither the staff nor organisation to enable it to cope with these problems.

The President was without that body of technical advice which alone would enable him to form a correct judgment as to the relative importance of the different methods of employing aircraft.

For technical advice of this kind he could look only to the naval and military members of the Board who sat there mainly as representatives of the Board of Admiralty and of the Army Council.

These considerations led to Lord Cowdray's addressing, on July 28th, 1917, to General Smuts (as the member of the War Cabinet charged with the general supervision of air matters) a letter setting forth his view that the Air Board should be turned into a permanent Ministry, that it should have a War Staff to consider the best use to be made of aircraft not needed directly by the operations of the army and the navy, and that the surplus aircraft should be considered a distinct unit from the air contingent attached to the Expeditionary Force.

On August 24th the War Cabinet decided to accept in principle the establishment of an Air Ministry, and also decided that a further Committee should meet at once to work out a "scheme" (Programme) for giving effect to this decision. This body consisted, under the chairmanship of General Smuts, of representatives of the Admiralty, War Office, Treasury and Air Board, and was known as the Air Organisation Committee. Its appointment was a necessary administrative corollary to the decision taken by the War Cabinet on the question of principle. The absorption of the two branches of the air service in a single service would at any time have been a matter of complexity, and the task was one of which the delicacy was enhanced by the fact that it was to be brought about in the middle of a great war and at a time when those concerned in the amalgamation were carrying a burden of responsibility and administrative work, the daily performance of which could suffer no interruption or delay. It was essential, therefore before any legislative action was initiated that the ground to be covered should be carefully plotted out, and this was the task which fell to the Air Organisation Committee.

The nature of its inquiries may be indicated under the following statement of some of the questions which were dealt with :—

1. the legislation needed for the establishment of an Air Force [and of an Air Council to administer it],

## Notes on "Civil Aviation"

2. the constitution of the Air Council, its membership and the appointment of duties between the members,
3. the organisation of the Air Ministry and the duties of Air Ministry officials,
4. the question of supply in all branches, the rates of pay, conditions of service and pension allowances,
5. the relation between the Air Ministry and Air Force and the War Office and Admiralty and Army and Navy,
6. the preparation of King's Regulations and other matters relating to discipline etc.

On the majority of these questions the Air Organisation Committee was able to arrive at an agreement with the departments concerned.

It is, however, only right (if a just perspective is to be maintained) to emphasise the importance of the contribution to the unification of the two services which had been made when their headquarters' staffs became housed under one roof.

The opportunities for daily conference on almost every subject of aeronautical administration which naturally ensued [together with the link provided by a joint system of supply and design] was probably an essential preliminary to the task of unification.

### Ministry of Air.

Following upon the discussions of the Air Organisation Committee,

November 1917 : The Air Force Bill was introduced into the House of Commons.

29 November 1917 : The Air Force Bill meets with no opposition of principle in either House and receives Royal Assent

The "scheme" (Programme) of the Act contemplates that the whole of the personnel and equipment of the R.F.C. and R.N.A.S. *"should be in due course absorbed by the Air Force under the control of an Air Council presided over by a Secretary of State and exercising functions analogous to those of the Army Council".*

It was not necessary to provide the new force with a complete and original code of administration co-extensive with the codes by which the Navy and Army are governed are made up of an accretion of centuries of experience.

The actual administration of the Air Force would clearly offer many analogies to that of the Army.

It was found practicable to adopt with modifications the Army (Discipline) Act to regulate the discipline of the Air Force.

*The Crown is empowered by Section 13 of the Air Force (Constitution) Act "to apply with any necessary modifications to the Air Force any of the various enactments relating to the powers, rights and duties"*

*It was not to be expected that the new department could spring forth fully' armed from the decisions of the Legislature.*

The provisions of the Air Force (Constitution) Act represented the fruits of a careful preliminary exploration by the Air Organisation Committee, but there remained important steps in the detailed organisation of the new Force which could not be undertaken until the Bill became law.

One of the first steps in reorganisation was a readjustment of the positions of

1. the *Technical Department of the Air Board* - responsible for the design of aircraft, and
2. the *Aeronautical Supply Department of the Ministry of Munitions* [under Sir William Weir - also a member of the Air Board]

Changes were made to unify the functions of the two Departments.

22 November 1917 : Lord Cowdray resigns as President of the Air Board.

23 November 1917 : Lord Rothermere appointed President of the Air Board. (FLIGHT 29 Nov. 1918) THE NEW AIR MINISTER : IT was officially announced on November 27th that the King has been pleased to approve of the appointment of Lord Rothermere to be President of the Air Council ; Lord Rothermere, who was Mr. Harold Harmsworth, is a younger brother of Lord Northcliffe; he will be fifty next April. He has built up several large businesses, including some prominent newspapers, such as, the Glasgow Daily Record, the Leeds Mercury, the Daily Mirror and the Sunday Pictorial. He has also been solely or partially concerned in such vast business concerns as the Anglo-Newfoundland Development Co. Lord Rothermere assisted to found the Union Jack Club, of which the usefulness has been fully proved since the war : and he founded the King Edward VII. Chair of English, Literature in the University of Cambridge—at present occupied by Sir Arthur Quiller-Couch. His first step in public service was his appointment as Director of the Army Clothing Department when grave deficiencies had been discovered, in that quarter, and his new appointment is doubtless partly in recognition of his success in reorganising the department. Lord



## Notes on “Civil Aviation”

Rothermere has suffered personally in the war. His second son died most gallantly while leading his men against the enemy a year ago. His elder son and heir has been twice wounded, and is at present serving at the front; and his third son, on leaving Eton, has joined the Royal Marines.

29 November 1917: Promotion for Second Lieutenants. AN Army Council instruction has now been issued embodying the decision that all 2nd Lieuts., if duly recommended, shall be eligible for promotion to the rank of lieutenant on completion of 18 months' commissioned service, if they have not previously been promoted to fill a vacancy. It will rest now and in the future with the commanding officer to recommend officers who have completed the qualifying period.

21 December 1917 : Order in Council issued to set up the Air Council

02 January 1918 : Order in Council issued to define the duties of the Air Council members and appoint members:

1. Secretary of State for Air - Lord Rothermere
2. Parliamentary Under-Secretary of State - Major J. L. Baird, C.M.G., D.S.O., M.P.
3. Vice-President - Lieutenant-General Sir David Henderson, K.C.B.
4. Chief of the “Air Staff” - Major-General Sir Hugh Trenchard, K.C.B.
5. Deputy-Chief of the “Air Staff” - Rear-Admiral Mark Kerr, C.B.
6. Master-General of Personnel - Commodore Godfrey Paine, C.B.
7. Comptroller-General of Equipment - Major-General W. S. Brancker
8. Director-General of Aircraft Production in the Ministry of Munitions - Sir William Weir ;
9. Administrator of Works and Buildings - Sir John Hunter, K.B.E.

The Air Council is now engaged [in consultation with the Admiralty and the War Office and other Departments concerned] in completing arrangements preparatory to the assumption of full administrative and executive responsibilities.

Two matters in which some misunderstanding may have existed as to “the seat of responsibility” for home defence :—

(1) Home defence against air raids is under the control of the Field-Marshal Commanding the Home Forces. Aircraft, anti-aircraft guns and searchlights for the defence of London have been united under the immediate command of a single General Officer. Elsewhere in the United Kingdom the guns and lights are under the local General Officer Commanding-in-Chief. As such, the Air Council is not responsible for Home defence against air raids

(2) The control of lighter-than-air craft for Home defence - has been grouped under the General Officer Commanding a Brigade. Section 3 of the Air Force Constitution Act, however, provides that “units of the naval or military forces engaged in *defence against aircraft* may [by arrangement with the Admiralty or Army Council] be attached to the “*Air Force*” -This refers mainly to aeroplanes and seaplanes. Airships, and to a lesser extent, the kite balloon have been administered on somewhat different lines.

Up to 30 December, 1912 : The British Army and Navy are both experimenting with airships.

30 December, 1912 : the Army Council relinquishes “experimenting with airships” to the Navy.

1st January 1913 : British Army airships and personnel are transferred to the Admiralty.

1st January 1913 : From this date onwards, airships are experimented with and administered solely by the Admiralty.

At the outbreak of war there were only five small airships in existence [in England] and little progress was made [in airship design / construction / operation] until March, 1915.

March, 1915 : the first S.S. (Submarine Scout) type airship is produced and a programme embarked upon.

March 1915 : Beginning in March, considerable airship development takes place.

1. Non-rigid airships form an important part of anti-submarine measures, but have a limited range of action.
2. Rigid airships are constructed by the Admiralty with a much wider range of action.

On the formation of the Air Force in 1918, though the principle was agreed to that ultimately airships should be transferred to the new authority, it was decided that until this branch of the service had become settled on a more solid foundation the responsibility



## Notes on "Civil Aviation"

for the design, production and administration should remain with the Admiralty. The personnel will be transferred to the Air Force while remaining with the Admiralty for production and administrative purposes.

The kite balloon was originally taken up by the Navy in March, 1915, and their example was followed by the Army, whose first three land sections in France were manned by naval personnel.

It was later arranged that the second Air Board should be responsible for the whole of the supply of E.F.C. requirements, though

the Admiralty remained responsible for the provision of a considerable portion of the demands for naval kite balloons. On the formation of the Air Force the whole responsibility for kite balloons will pass to the new ^ body.

Reference should be made to some of the organisations subsidiary to the central authority whose evolution has been traced in the preceding paragraphs.

Inventions.—The administrative separation of the two branches of the service reflected itself in the arrangements for dealing with

aeronautical inventions, the consideration of which was divided between the Board of Invention and Eesearch under the Admiralty, the Munitions Inventions Department under the Ministry of Munitions, and the Directorate of Military Aeronautics "under the War Office. This division of responsibility possessed obvious disadvantages in a matter where the co-ordination . of all sources of knowledge and experiment was of prime importance, and one of the duties with which the first Air Board was charged was the organisation of a system of further interchange of ideas on air problems between the two services.

Proposals

to this ead were put forward by Lord Curzon without securing acceptance from some of the parties whose concurrence was essential, and a settlement of the problem was not reached until the middle of 1917, when an Air Inventions Committee was

appointed by Lord Cowdray, to which was transferred all duties in connection with the examination of inventions relating to heavier-than-air craft. This Committee works in close cooperation with the Advisory Committee on Aeronautics.

Civil Aviation.

A Committee known as the Civil Aerial Transport Committee was appointed in April, 1917, under the chairmanship of Lord Northcliffe to consider :

- (1) " The steps which should be taken with a view to the development and regulation, after the war, of aviation for civil and commercial purposes, from a domestic, an Imperial, and an international standpoint.
- (2) " The extent to which it will be possible to utilise for the above purposes the trained personnel and the aircraft which the conclusion of peace may leave surplus to the requirements of the naval and military air services of the United Kingdom and Overseas Dominions."

The Committee at the outset divided its enquiry into five branches and entrusted each to a special committee, as follows :-

- (1) Questions of law and policy.
- (2) Technical questions as to the performance of aircraft and the requirements of aerial services.
- (3) Business questions relating to the position of the aircraft manufacturing industry after the war.
- (4) Labour questions.
- (5) Problems of research and education.

Reports by all the five Sub-Committees have been drawn up and are now under consideration by the Main Committee.

Medical Research.—A Medical Eesearch Committee appointed in March, 1917, has performed valuable services to the investigation

of the various physiological phenomena produced by flying at high altitudes and kindred subjects. It has been found by experience that flying men are subject to many peculiar disabilities, and considerable progress has been made in the methods of prevention and cure of these disabilities.

\*\*\*\*\* Supply of Aircraft.

The above recital indicates generally what steps have been taken in matters of administration and control. It should be supplemented by some general account of the measures taken aa regards supply of aircraft and the development of that supply.

## Notes on "Civil Aviation"

In endeavouring to describe the measures taken to meet the aircraft needs of the Navy and Army, the writer is at once confronted by the fact that the information desired by the country is precisely the information desired by the enemy. What the country wants to know is what has been the expansion in our Air Services ; whether we have met and are meeting all the demands of the Navy and of the Army, both for replacement of obsolete machines by the most modern types and for the increase of our fighting strength in the air ; what proportion of the national resources in men, material and factories is being devoted to aviation ; what the expansion is likely to be in the future. These are precisely the facts which we should like to know with regard to the German air service, and for that reason it would be inadmissible for us to supply Germany with corresponding information about ourselves by publishing a statement on the subject. It can be said that the expansion of our Air Services is keeping pace generally with the growing needs of the Navy and the Army.

The brilliant part played by the Royal Flying Corps and the Royal Naval Air Service in the battles of the Somme, Vimy, Messines and Ypres has been described by the Commander-in-Chief, who has also borne frequent testimony to the inestimable value of the work performed daily and nightly by the two air services. It is fair to say that not even the well-known superiority of our airmen over those of the enemy would have enabled them to have earned the Commander-in-Chief's praise in so unstinted a measure unless they had been supplied with satisfactory machines and equipment from home. It is rather the fashion to criticise the quality of our machines. Most of the critics, however, are ignorant of the technical and manufacturing difficulties which have to be overcome in order to keep up a constant and increasing supply of the most up-to-date machines. Not only are the technical difficulties and the resultant research and experimental work formidable in themselves, but the task of building up in war time, without seriously affecting the requirements of other services, a new industry of a most highly skilled character necessarily puts a heavy strain upon the organising and manufacturing ability of the country. The growing realisation of the increasing importance of aviation as an artificer of victory has recently been reflected by the concession of first priority to labour and materials required for aircraft production.

The nature of the duties performed by the Royal Naval Air Service, both in conjunction with the fleet and from naval bases, makes secrecy essential to success. It is, unfortunately, inevitable, therefore, that the public should remain in the dark on this subject; but the Germans, who in this matter are perhaps the best judges, have good reason to know and to regret the great and growing activities of the Royal Naval Air Service. All that has been said regarding the difficulties of supplying the requirements of the Air Forces operating over the land applies equally to the supply of those which operate over the sea. In both cases difficulties are being overcome and the outlook is improving.

The science of aeronautics is in a state of constant and rapid development; improvements in engines, aeroplanes and their numerous accessories are constantly being worked out. But the interval between the discovery of an improvement and its introduction into the service is, owing to technical considerations, very much longer than is commonly supposed. Experience shows that, as a rule, from the date of the conception and design of an aero-engine to the delivery of the first engine in series by the manufacturer, more than a year elapses ; the corresponding period for an aeroplane is about one half as long.

Consequently, plans have to be laid for a long period ahead, and these plans are liable to be upset by many uncertain factors.

- I. The hopes based upon the promising results given by the first experimental engines of a new design are frequently disappointed owing to difficulties of bulk manufacture or to defects only developed after long trial in the air ;
- II. new types of aeroplanes favourably reported on when first tried are found on longer experience not to give complete satisfaction, and yet it is impossible, if we are to keep ahead in the keen struggle for aerial superiority, to wait for full experience before placing orders.
- III. Risks must be run, and new types must be adopted at the earliest moment consistent with reasonable assurance that they will constitute a substantial improvement on what is already in use.
- IV. Orders must be placed, moreover, for considerable numbers and for delivery over many months, as the large output required for our present flying services can only be obtained by bulk orders permitting a high degree of sub-division of work.

The next step in the problem is the balancing of the engine and the aeroplane programmes.

## Notes on "Civil Aviation"

Owing to the much longer period required for the production of engines than of aeroplanes, orders for the former must be placed for relatively long periods ahead, before it is known what types of aeroplanes will be required when the engines become available.

The problem is complicated by the fact that manufacture and delivery rarely if ever proceed in accordance with anticipation.

The output of a particular type may be delayed for weeks or even months owing to some technical difficulty of manufacture. Moreover, as replacement of losses and expansion are proceeding simultaneously in the flying services, and the rate of wastage in different types of engines and of aeroplanes varies considerably according to circumstances, it is impossible to forecast with accuracy what engines will be available for the equipment of new types of aeroplanes after wastage has been made good. Nor is it possible to any great extent to adjust the programme by modifying orders once placed without disorganising supply.

The problem does not end here. Whenever a new type is introduced provision must be made for accumulating a sufficient "head" of spare engines, spare aeroplanes and spare parts of innumerable kinds, to keep the squadron to be equipped with that type in a condition to make good the day-to-day wastage and carry out the constant repairs required.

Such being the nature of the problem, it is satisfactory to be able to record that during the year 1917 not only was the number of squadrons of aircraft on the various fronts increased in a notable degree, but there was a complete replacement of machines and engines of the older types. The very great increase in output which is being obtained has placed a considerable strain on the workers in the aircraft and aero-engine factories of the country, a strain which is being met on the whole in a satisfactory manner.

The difficulties in connection with production are aggravated by the competing claims of many different types of aero-engines. Standardisation is the ideal but it is obviously difficult of attainment having in view the importance of not losing time in production and at the same time of keeping abreast with the very latest developments necessitated by the need for constant increase of horse-power and higher performance.

The Air Council are most keenly impressed by the need for concentration on a few approved engines, and they have the whole question of the reduction of numbers of types under constant and careful consideration.

Attention was drawn, on more than one occasion, by manufacturers to the importance of maintaining the interest of workers in aircraft factories in the highly important but generally monotonous work on which they are employed.

Engaged, as they frequently are, on the production by a repetition process of some small part of an aeroplane, these men and women find it difficult to realise that they are contributing effectively to one of our most valuable instruments of warfare.

It was accordingly arranged that Captain Ewart, E.F.A., well known as a writer by the name of "Boyd Cable," should visit various squadrons at the front and gather materials and photographs for lectures concerning the exploits performed with various types of aircraft for delivery to the workpeople engaged on the manufacture of those particular types. Captain Ewart delivered several series of lectures which, judging from the reports received from the factories concerned, proved a very great success.

### Ministry of Munition - I.

#### Administration,

The Act establishing the Ministry of Munitions was passed on June 9th, 1915, and special powers were conferred upon the Minister of Munitions by an Order in Council dated 16th June, 1915, the Munitions of War Act, 1915, and subsequent Acts and the Defence of the Realm Acts.

Mr. Lloyd George took up his work as Minister of Munitions on May 26th, 1915, the nucleus of the new Department being formed by the Staff of the Cabinet Committee on Munitions, together with that of the special organisation established at the War Office under Lord Kitchener for the development of munition supply, known as the Armaments Output Committee.

To these were rapidly added certain older sections of the War Office organisation, such as:

1. the branch dealing with contracts for warlike stores and
2. Lord Moulton's Committee for the production of high explosives.

## Notes on "Civil Aviation"

This process of transfer from the War Office was carried further in latter months, and by the end of 1915 the scope of the Department covered the supply of :

1. Arms,
2. Ammunition,
3. Explosives,
4. Optical Munitions,
5. Materials,
6. Trench Warfare Supplies,
7. Munitions Contracts,
8. Munitions Finance,
9. Inspection,
10. Invention,
11. Design and the Administration of the Royal Ordnance Factories,

these functions being in the main duties which had formerly been exercised by the War Office.

During 1916 the Ministry of Munitions was entrusted with further responsibility for:

1. the storage of Gun Ammunition,
2. Supply of Tanks,
3. Supply of Tractors for Heavy Howitzers,
4. Supply of Railway Materials for the Army,
5. Supply of Mechanical Transport Vehicles, and
6. the Supply of Chemical Glass and Laboratory Ware.

Since December, 1916, these functions have been further extended to include the highly important department in charge of the supply of heavier-than-air Aircraft for both Land and Naval services, as well as the development of Agricultural Machinery Supply on behalf of the Board of Agriculture.

Since June, 1917, the Ministry of Munitions has also been responsible for the Supply of Fuel Oils.

" THE WAR CABINET REPORT FOR THE YEAR 1917 - Presented to Parliament by Command of His Majesty. H.M. STATIONERY OFFICE at the following address:  
Imperial House, Kingsway, London, W.C.2, Printed under the authority of His Majesty's Stationery Office  
By DARLING and SON, Limited, Bacon Street, E.2= Cd. 9005.] 1918.

29 November 1917 : FLIGHT : Promotion for Second Lieutenants.

*AN Army Council instruction has now been issued embodying the decision that all 2nd Lieuts., if duly recommended, shall be eligible for promotion to the rank of lieutenant on completion of 18 months' commissioned service, if they have not previously been promoted to fill a vacancy. It will rest now and in the future with the commanding officer to recommend officers who have completed the qualifying period.*

The King at the N.P.L. A BUSY morning was spent by H.M. the King on November 23rd at the National Physical Laboratory, Teddington, and the instructional workshop in the Twickenham district. It was explained to the King that the workshop had been established to meet the serious shortage of suitable labour for the requirements of engineering firms for work of high standard, principally the construction of aeroplane engines.

They were most successfully training, in a very short time, highly specialised workers.

Aeroplane engines, in various stages of completion, were examined by the King, who took great interest in the measures taken to ensure dead accuracy.

In spite of the difficulties it had been found possible to teach girls to make and gauge important parts of aeroplanes to the thousandth of an inch.

At the N.P.L. the King, who opened the Laboratory in 1902, was received by the Director, Sir R. T. Glazebrook. His Majesty saw aeroplane parts being tested in the wind channel and witnessed the delicate operation of gauging the gauges. Towards the end of the visit the King was shown three similar looking bars of metal, one of ordinary steel, another of aluminium and a third of a new and secret alloy. The third was not much more than a featherweight in comparison with the first, and it was explained that by a series of exhaustive tests and experiments an extraordinarily light metal had been produced which, in many of its attributes, was equal to the finest steel.

## Notes on “Civil Aviation”

end of 1917 : American built DH-4s with Liberty engines flying regularly above Dayton Ohio ; a few months later they were have been crated and are in transit to European airfields for action alongside the already battle hardened fleets of Spads, Sopwith Camels, and Nieuports however Liberty-powered DH-4 had no major roles in winning the war<sup>101</sup>

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<sup>101</sup> ENGINEER IN CHARGE - pg 19

**CANADIAN AVIATION - 1918**

1918 : Women over 30 gain the right vote in the British Empire.

02 January 1918 : the Air Board (UK) is reconstituted as Independent Air Ministry created within British Ministry of Defence (MOD). The new Air Ministry is lead by Lord Rothermere.  
Offices were still located in the Hotel Cecil until the new Air Ministry was transferred to its new permanent office at Adastral House in the Kingsway, London.

January 1918 - Sir Hugh's successor was an officer whom the R.F.C. knew, and whom they trusted as they trusted General Trenchard himself. Major-General J. M. "Jack" Salmond, in France, and had seen his work as a Squadron- Commander, as a Wing-Commander, and as a Brigade Commander.

The younger generation knew him as G.O.C. the Training Division at home, an officer who had organised a system of training which gave a young pilot more military training and many times more hours in the air in six months than had been possible under the old system in a year.

Major-General Sir Hugh Trenchard is made Chief of Air Staff. Trenchard resigns on 13 April 1918.

January 1918 : RNAS ends Canadian recruiting, some **635 men were raised**. See more at: <https://legionmagazine.com/en/2015/06/canadian-flyers-go-to-war/#sthash.Nujh0vay.dpuf>

? 1918 : UK Government appointed "Civil Aerial Transport Committee" recommends subsidies to ensure the success of British "Civilian" aviation post WW1.

American Billy Mitchell : commands the American Air Service in France in 1918. Mitchell meets and is impressed by Trenchard. Mitchell returned to America to preach Trenchard's doctrine "independence of air power" in the 1920s.

spring of 1918 : the government of Prime Minister Robert Borden presses for the development of a Canadian "air wing", consisting of eight squadrons, for service with the Canadian Corps in France.

1917-1918 : 7,453 mechanics recruited in Canada for RFC / RAF. There was no air recruiting office in the Department of Militia, but British officers on the Governor General's staff found numerous young men volunteering to join the flying services - See more at: <https://legionmagazine.com/en/2015/06/canadian-flyers-go-to-war/#sthash.dOC4VryN.dpuf>

9 January 1918 : Frank Wilton Baillie knighted "Order of the British Empire" (OBE), the first Canadian to receive this honour. OBE was created to recognize service in WW1.

January 1918 : The UK Air Ministry formed "to cater for all aviation interests", Service and Civil(ian)

January 1918 : the UK Advisory Committee for Aeronautics (on which the USA's "NACA" had been modelled) becomes the "Aeronautics Research Committee" (& shorn of much of its power, independence and drained of funds is then) and placed under jurisdiction of the Aircraft Factory -

1918 : 5 German submarines are known to operate off Canada's East Coast. flying-boat stations were established at Dartmouth and Sydney, N.S. The aircraft and personnel were members of the United States Navy, but it was intended that a Royal Canadian Naval Air Service (RCNAS) would take over. The service was authorized on Sept. 5, 1918, and started recruiting and training ground technical personnel, but with the armistice on Nov. 11, 1918, the RCNAS was promptly disbanded - See more at: <https://legionmagazine.com/en/2015/06/canadian-flyers-go-to-war/#sthash.Nujh0vay.dpuf>

1918: Lieutenant-General Sir Richard Turner, commander of Canadian forces in England, had picked up on Borden's idea of a Canadian Flying Corps. He was supported by Sir George Perley, Canadian High Commissioner to the United Kingdom, in lobbying for such a body.

## Notes on “Civil Aviation”

17 February 1919 : AERIAL NAVIGATION BILL : HC Deb Imperial Parliament - London, England vol 112 cc666-87  
666

§

Order for Second Reading read.

§

The UNDER-SECRETARY of STATE for AIR (General Seely) :

it is a temporary measure, we have asked the House to pass this Bill is that unless we get legislation of this kind it is impossible to permit civilian flying at all, We are advised by the Law Officers of the Crown that we have not the power in the Air Ministry to make Regulations for civilian flying without legislation. this Bill to the House as being necessary in order to enable the science of flying to be pursued other than by the military.

The Bill provides that the Secretary of State shall have power to make certain Regulations, and, in order to forestall criticism of those Regulations, I would say that the object of them is solely to secure the reasonable safety of the public.

We have no desire to impose upon civilian flying any restrictions which would in any way tend to prevent people from evolving new types or doing anything which they think will advance flying.

But, of course, it is necessary to have power to secure the safety of the public, and this we shall obtain by the provisions of the Bill. The reason why this is only a temporary measure, and why it is proposed only to take power to act under it until the first day of next year, is that it will be necessary later in the Session, by permission of the House, to introduce a larger Act regularising flying in accordance with the provisions of a Convention, which we hope will be agreed to by the Allied Powers, at a Convention which will shortly meet in Paris.

We have already made considerable progress in agreement with France, America, and other Allied nations, and I trust we shall come to a general agreement as to the regulation of flying.

This will then be embodied in a Bill which I shall ask leave to bring before the House. In the meantime, this Bill will enable us to give permission to civilians again to commence to fly. I earnestly hope it may have a quick passage through the House, for he would be a rash man who set any limit to the possibilities of flying in the future; and the sooner we permit those who are interested in it to fly, under proper safeguards for the public safety, I think the better for all concerned.

Rebuttal by Mr. JOYNSON-HICKS : I would like to point out to the House that for the first time, new Regulations are going to be brought forward dealing with civilian flying of possibly the most far-reaching character. The Regulations that are going to be made by my right hon Friend at the present moment, though only temporary, will probably form the foundation of the subsequent Regulations or of the Bill which he propose to introduce later on.

19 March 1918 : Hugh Trenchard resigns from UK Air Ministry after Lord Rothermere lies to the RNAS about delivery of 4000 new aeroplanes which did not exist. I do want to pro-test against this form of legislation—because it is really legislation—being carried out at the whim of the Secretary of State [...] he simply introduces an enabling measure to enable himself or the Secretary of State for Air to make any kind of regulations he thinks fit, and those regulations will be in force for a year, and probably form the basis of future legislation. These regulations are bound to interfere with the liberty of the subject in every possible way. They are bound to deal with registration, and the grant and suspension of licences for flying. As my right hon. Friend knows, prior to the War, no licence was required. The old Acts of 1911 and 1913, whose rights are carefully preserved, were merely Acts enabling the Secretary of State to prescribe certain areas over which flying should not take place [...]. I do not know whether the House is aware that there has been sitting a very strong Committee, which has drawn up a model Bill. Probably my right hon. Friend has that Bill and knows the contents of it. The House, however, does not know it. It was the strongest Committee—although I was a humble member myself—I ever sat upon. Representatives of the War Office, Navy, Air, Foreign Office, Treasury, Home Office, Board of Trade and His Majesty's Customs, were upon it. In addition, there were some flying men and some lawyers. The whole question of the regulation of flying in this country was gone into, and a most elaborate Bill was drawn up. I think we sat for over a year dealing with this measure, which, I venture to say, could be brought into the House and carried almost in a single sitting. It was completely accurate in all its details. Instead of adopting that, however, my right hon. Friend comes forward and asks us to give him, or his Secretary of State, the right to make any kind of regulation he thinks fit. [...] Although my right hon. Friend has disarmed me by his statement as to the temporary character of his Bill, there are one or two questions I want to ask him as to the regulations he is going to make, more particularly with regard to flying over other people's property. While it may be perfectly right for Parliament itself to take away the right of a man to prevent flying over his own property, I suggest it is not right and proper to leave those rights merely in the hands of a Secretary of State. What provision is he going to make? At the present moment I very gravely doubt whether, by an Order made under this Bill, it would be possible for the Secretary of State to take away the right of any man to prevent flying over his own land. Of course that matter must be dealt with. At the moment the law undoubtedly is—I do not want to press the legal point of view—but the position undoubtedly is that a man who owns a piece of land or house owns



## Notes on "Civil Aviation"

the air above it right up to the sky. [Hon. Members: "No!"] I am very sorry there are any hon. Members who do not know the law. I thought all Members of Parliament would have known that. That has got to be dealt with, and it is desirable that it should be dealt with, because we could not have one eccentric owner of a particular piece of land, which might be under an aerial highway, stopping flying over it. But is my right hon. Friend proposing to deal with that by regulation under his Bill? If so, I suggest he should consult the Law Officers of the Crown as to whether it would be possible to deal with that by mere regulation under the Bill. Then what is my right hon. Friend going to do about territorial waters, or what one might now call territorial air? He preserves in his Bill territorial rights, but a three-mile limit is no earthly good in regard to the air. [...] He takes power under the Bill to provide for "the registration, identification, inspection and certification of aircraft." My right hon. Friend, by regulations, is going to take upon himself the certification of every aircraft which is allowed to fly in this country. He knows that an aeroplane may be certified to-day and may be quite unfit for use to-morrow, and yet that aeroplane is to be let loose with a Government certificate, which any passenger who chooses to go in the aeroplane is bound to treat as an official certification of its air-worthiness [...] I venture to suggest my right hon. Friend should consult the proposals of the committee to which I have referred, which suggested that merely the type of aircraft should be certified as being an air-worthy type, and that it would be quite out of the question to attempt to deal with the certification of the air-worthiness of any individual machine. Then, of course, the same thing applies to "the licensing, inspection and regulation of aerodromes". Is he going to give a certificate with regard to every aerodrome that is perfectly safe, because that, I take it, is what certification means. When I was on another Committee on the Air Force a little time ago we came across certain aerodromes which the Committee unanimously condemned as unsafe, but of which the military authorities felt bound to continue the use. Naturally at that time, during the War, we civilian members of the Committee could not possibly protest, but there are aerodromes to-day in this country which are not safe for ordinary purposes, and I think my right hon. Friend must take very great care as to what steps he is going to take about certifying certain individual aerodromes. The last point I am going to ask is this: What steps is he going to take by his regulations, or otherwise, in regard to the question of damage by aeroplane accident? Suppose, for instance, an aeroplane comes into collision with another aeroplane and both men are killed, there is no possibility of finding out who is at fault. The machine drops and kills someone on the King's highway, or does damage to one of His Majesty's subjects. At the present moment everybody knows that if damage occurs on the highway from a motor car or ordinary vehicle, the injured person has to prove there was negligence. I do not know whether that is going to be the case in regard to aircraft. It is a very serious question indeed. That Committee, to which I have referred, reported that, in their opinion, an aeroplane should be treated as liable for all damage it creates, and that it should not be necessary for anybody to prove, or attempt to prove, negligence, because it would be impossible. I have no doubt that my right hon. Friend has considered these points in the regulations he proposes to make, but before the House parts with the Bill I think I may be entitled to say, for the benefit of the newer Members, that the Clause in the Bill which says that the regulations shall lay for twenty-one days on the Table of the House, during which time an Address may be presented to His Majesty, is a mere farce. There is no real possibility, as my right hon. Friend knows, of objecting to these things laid on the Table of the House, simply because one can never get the time of the House in order to do it. Therefore, before parting with the Bill, I ask my right hon. Friend to be a little more explicit and give us a little more information on the points I have raised.

Comment by Mr. MOSLEY : I must crave the indulgence of the House this evening not only on the usual account of a maiden speech, but I must ask it to condone in me that very serious offence which the great Chatham once described in this House as "the atrocious crime of being a young man." That dictum from the mighty past weighs rather heavily upon me this evening from the consciousness that I am to-day the youngest Member of this Assembly. The House, however, is considering a subject which, I think, we may claim as belonging principally to the youth of to-day, but, we may say with some confidence, to all generations of the future. I have not that experience which is possessed by some other hon. and gallant Members in this House; in fact, my total experience of flying amounted only to about a year, and I must confess, like thousands of others, that my brief contact with the air, and, on one occasion, at least, with her sister element the earth, left a rather more decided mark upon my body than my activity imprinted on the development of aviation. As one, however, who has an undoubted belief in the potential aerial supremacy of our country, I feel impelled this evening to draw attention to the greatest pitfall which could lower us from our present undoubted superiority in the air.

The war-time epidemic of bureaucratic control has had this nation in its grip for a long time past, and we may deduce from the Bill that we stand in very grave danger of its paralysing influence being extended to embrace the youngest child of the British public, our newly-found Air Force. It is universally admitted, I believe, to-day, that State control is beneficial in some spheres where the free play of individual competition and interest may jeopardise the safety and comfort of the community as a whole, but my contention is that the air is the very last conceivable sphere of human activity to be brought too closely beneath the eye of the clerk in Whitehall. We find in this Bill the very ominous phrase, "Inspection and certification of aircraft." There is a shrewd suspicion in the mind of the trade concerned, that inspection infers the arbitrary right of the State to supervise and intervene at every step of the daily business of the private exploiter of aviation. Surely the easiest and most effective means to the attainment of the desired end—the safety of the public—would be the imposition of the very heaviest penalties in any case of accident which could be attributed to negligence. This, of course, would not only prove less irksome to the private exploiter of aviation, but would actually contribute a greater guarantee to the public that every precaution had been taken. By adopting this course the Government would lay the whole onus of responsibility for public safety upon the shoulders of the company, who would naturally take every step to



## Notes on "Civil Aviation"

see that their own staff was kept at a proper state of efficiency, rather than run the risk of mishap, which would not only ruin their business, but actually curtail the liberty of those responsible.

If the Government undertake the work of supervision, little or no blame can be laid at the door of the company should anything go wrong. I am confident that the public would prefer to repose its safety upon the thoroughness and reliability of the work of the man with a halter around his neck in the shape of heavy penalties if anything go wrong than entrust their person to the tender care of some Government official or inspector who works upon the time system. All new types admittedly must be tested by the Government before being released for the purpose of public conveyance, but if this word "certification" imply any desire on the part of the Government to confine firms engaged in this work to any particular officially approved design. I am confident that the restriction will strike a very severe blow indeed at the industry of aerial manufacture in this country. Imagine in a few years' time some enterprising manufacturer introducing a novel design to the Government Department. Consider the hunt that would ensue through dusty tomes for precedents, and the abrupt refusal when it was discovered that no analogous type has been used in the great War.

Perhaps I exaggerate, but I am confident that many Members of this House will agree with the view that officialdom seldom approaches a novelty with any great predisposition in its favour. I have no very great knowledge of technique, but those who possess that knowledge inform me that it is quite possible that the distance covered by aerial progress in the next decade may be commensurate with that traversed in the last. Surely that ought to open a whole new vista of the utmost development. If one, however, may judge our expectations from officialdom in the future in the light of past kindnesses received from the same quarter, then British manufacturers will embark upon this great new stage in their business with a millstone round their necks. No great exercise of the imaginative faculty should be required to foresee the day when the aviation tank and the aeroplane will have driven the Infantry and other similar units from the battlefield, whilst the furious speed and mobility of the aerially-armed plane, with a weight-lifting capacity which will enable it to carry heavy armaments, will have banished the battleship and the merchant ship from the ocean. If this view be correct—and it is widely believed I understand amongst people who should know—our official perspective in regard to aerial matters appears to be somewhat deficient. In fact, the suggestion that the present position of the air and the War Department should be reversed appeals to be not wholly outside the realms of humour.

In his speech on the Address the right hon. Gentleman the Secretary of State for War (Mr. Churchill) told the British public not to be led into too extravagant expectations in regard to the future of the air. As I have explained already, my political memory is not long, but I have always been led to believe, in fact I have almost been brought up on the idea, that what the right hon. Gentleman suffered from was a paucity of that invaluable political asset called imagination. On this occasion, however, I must warn him that predecessors of his at the War Office fell into exactly the same error, in refusing to credit the possibilities of such rapid extension of the activities of aircraft as we have seen. That regrettable occurrence was described by my right hon. Friend the Member for Chatham (Lieut.-Col. Moore-Brabazon) in his speech on the same day. It was only one of a series of incidents of this nature. In fact, at every step of aerial development that Cerberus at the gate of progress, Officialdom, has refused to credit the possibility of the next step. The development of this great new sphere of our ascendancy, which admittedly contributed largely to the recent glorious termination of hostilities, was achieved almost entirely by individual effort and sacrifice, in the face of an official lethargy and passive opposition which have seldom been rivalled even in the long record of these things which stand to the credit of British bureaucracy.

In dealing with this great problem success may mean the greatest tribute that has yet fallen to British initiative and energy, while one failure will in all probability mean the hot surrender of that hard-won commercial supremacy of the race, the fruit of centuries of individual effort and enterprise. Let us always, then, remember the empiricism of British bureaucracy, which has invariably been failure, and that British individualism has frequently pulled success through. Our Colonial Empire stands a glorious memorial of British individualism, and by no means one of State intervention. The peculiar genius of our race has always manifested itself in strange new enterprises where the individual stood alone, uninspired save by a spirit of adventure in entering new realms and ranges of human activity. In fact, we may say that from the days when Queen Elizabeth refused to countenance the adventurous schemes of Drake, down to the comparatively recent struggle to impress upon the official mind the supreme importance and immeasurable possibilities of aviation, our history has been one long story of individual enterprise and success surmounting every obstacle thrown in its path by official ignorance and apathy. I venture this evening to suggest, with all respect to the Government, that they should safeguard the public in every possible way by the imposition of the most stringent penalties in cases of proved negligence; that they experiment in matters of design by means of that very excellent staff and machinery which they now possess; but that, above all, they allow full play, without irksome or unnecessary restrictions, to that supreme manifestation of the genius of our race—individual initiative and enterprise—which has so frequently proved successful, while, on the other hand, the activities or in activities of State authority have proved a lamentable failure. I appeal to the right hon. Gentleman to allow the private manufacturer to look to the Government for protection and inspiration rather than for restriction and oppression.

Sir F. FLANNERY : The House is to be congratulated upon the accession of the hon. Member for Harrow, and upon the  
675

fresh and fluent contribution that he has made to the Debate to-night, with the suggestion in it of the contributions he will make to future Debates. I should not have ventured to speak, certainly not from the standpoint of my hon. Friend, who is the youngest Member, while I am sorry I am amongst the older Members of the House, but that I desire to speak from the standpoint of one

who has been engaged during the War in the manufacture of aeroplanes, and who has all his life had to do with exact forms of Government inspection and Government interference, so-called, which is set forth in the Bill, and to which the hon. Member for Harrow appears to have a rooted objection. No one, so far as I have heard, has yet referred to the fact that the general provisions of this Bill are identical with the existing provisions and experience of some generations now of the relationship of the Government of the manufacture and carrying on of navigation by sea, and travelling by railway and railroad on land. No omnibus can run the streets of London without having had a certain amount of Government inspection and Government certification. No passenger ship, in fact no ship of any kind, can navigate the sea without having passed the inspection of a Government officer in respect to its safety so far as foresight and skill can secure it for those who will take passage in such ship. No railway train can possibly start, even with the hon. Member who has spoken on board, without every precaution having been taken by signals, and in the construction of the locomotive and coaches under Government inspection, for the purpose of ensuring the safety of the passengers. Is it then to be suggested that with all those precedents and all that experience of these precautions and the safety which has arisen from them, and which is well known, notwithstanding disadvantages—which I admit—that this new and extremely dangerous type of navigation in the air is to be set at large without any precaution by way of Government inspection to secure the public safety? I venture to say that the Government would be criminally and morally responsible for the many lives that were at stake if we were to adopt such a principle as that which my hon. Friend has risen to advocate. I sincerely hope that the Government will, of course, agree to Amendments which will be moved in Com-

676

mittee, but I trust they will stick to the general principle of the Bill, and will see that proper precautions by way of inspection and certification, the testing of materials, and the examination of designs will be undertaken. I do ask my right hon. Friend to take this from me, as one having life-long experience in the matter, that he should do everything in his power to prevent the strangling of improvements which at one time so discredited the Board of Trade in their system of inspection, both as regards railways and steamships. There was a period, thirty-five years or so ago, when no improvements, however obvious, however well-vouched for, would be considered by the Board of Trade until, in some illicit way, such improvement had been tried and had been demonstrated to be satisfactory. When this Bill becomes an Act let such organisation as my right hon. Friend will, I hope, establish be guided by the highest possible and the most progressive scientific men that he can find. Let there be an experimental department if necessary. Let the Government officials not be obstructionists, but lead in the van of progress and encourage rather than obstruct. Having done that, having put their imprimatur upon that which is safe and their ban upon that which is unsafe, they will contribute to progress, and ensure the safety of those who will travel by what, I believe, will be one of the regular sources of transit in the immediate future.

Lieut.-Colonel MOOREBRABAZON I apologise for again troubling the House so soon after my recent speech, and I have been told that it is not a very proper proceeding. However, I would not like this opportunity to go by without saying one or two words upon this Bill. Aviation may be divided under two heads, military and commercial. The other night we discussed a little the military side of it, and the Prime Minister, I regret to say, has caused a very excellent Minister, the right hon. Gentleman the Member for Dundee (Mr. Churchill), to lead a double life, for he is not only Secretary of State for Air, but he is also Secretary of State for War. To-night we are looking upon this subject more from the commercial side rather than from the military point of view. We welcome any Bill and will help any Bill such as this which does allow civilian flying, for that is a great thing which we want, and want quickly. We must recognise and this House must realise, however, that we are giving to the Government a blank

677

cheque in aviation, for that is what this Bill really means. [Hon. Members: "No!"] Under the system proposed the manufacturers of this country must stop immediately, but I understand that the Under-Secretary for Air has already consulted with the trade and has promised some modifications.

I want to ask for two assurances on points of general principle which, if the right hon. Gentleman will agree to, I am sure we can allow this Bill to pass. I want him to allow these people to design their own machines without control. Up to the end of the War no aeroplane was allowed to go up unless it had received the complete assent of the experts of the Air Ministry. I maintain that now we have got comparatively to peace, initiatives and all sorts of designs must be allowed to be developed wherever they like.

Inspection has not helped aviation as much as people think, for it started badly. Lord Kelvin said that dynamic flight was an impossibility. The Government designed machines, and even with all the help they got from scientific gentlemen the Government machines have not been the same success as machines made by private firms, which have knocked the Government machines out. This contemplated inspection of design is what I object to, and I ask that the Government should allow machines to be built and tried, and when they come forward, as firms will do, with machines ready, that the Government shall look at them and see whether they are safe from the public point of view.

The second point I would ask the right hon. Gentleman is, that the State shall not be allowed to hamper the industry by excessive inspection on the ground of the safety of the public—I do not mean after the machine is built, but during the construction of the machine. The risk of disaster must always be felt, and no regulation will ever get rid of that. We have seen in the case of ships, with all their wonderful watertight compartments, the "Titanic" sink. Commercial aviation is a commercial proposition, and if people are going to carry passengers in their machines they are going to have to pay if they kill people in those machines, and the right body to regulate and inspect machines is Lloyd's, and not the Government. The whole thing comes down to a commercial proposition, and you will have to bring Lloyd's insurance people into it. If the right hon. Gentleman can give me

678

later assurances on those two points I think that there will not be very much opposition to this Bill.

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Mr. BARTLEY DENNISS There is no doubt that this Bill is absolutely necessary, and one matter which is strongly in its favour is that it is only a temporary provision. It is too soon to allow the British public to be put at the mercy of every rash individual who chooses to go in for aeroplanes either for sport or for commercial purposes. This is not the first Bill to deal with safety, for we have had before one Bill in 1911 and another in 1913 dealing with safety.

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Mr. JOYNSON-HICKS No.

Mr. DENNISS There was the Air Navigation Bill of 1911, which was for the protection of the public—

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Mr. JOYNSON-HICKS Have you read that Act?

Mr. DENNISS Yes, every word of it. The other Act was in 1913 which brings under the Defence of the Realm Act the coastlines and territorial waters of the realm. This is not a Bill to legalise military flying because that has already most elaborate provision. The object of this Bill is to deal with commercial or civilian aircraft, and that being so, I look at this measure with a great deal of doubt and hesitation. It is perfectly right and proper that for the present at least pilots' licences should be given by the Government pilots and aircraft should be registered and certified, because there is no other body at present which is capable of performing these very important duties. The first two lines of the first Clause of the Bill are enough to inspire one with a great deal of doubt as to whether or not this Bill may not be used to crush the commercial use of aircraft altogether because it says: "It shall be lawful for the Secretary of State by Order to regulate aerial navigation over the British Islands and the territorial waters adjacent thereto, and in particular...." "(a) the grant, suspension and revocation of licences to pilots and other persons engaged in the navigation of aircraft." It is the most general Clause I have ever seen. It allows the Air Council, which is the authority under the Bill to stop all aircraft and flying in this country. It can prevent them going out of the country or coming in or flying over the country. That being the case unless these regulations are inspired by people who are thoroughly

679

in sympathy with the commercial aspects of the aircraft industry then I am afraid that industry must very much suffer. We remember well what happened in the case of the motor traffic. We remember how the first motor vehicles were not allowed to use the public roads unless they had a man in front of them with a red flag, and they were not to go over four miles an hour. That ought to be a warning to the House. That was the first Government idea as regards motor traffic, and it completely put England behind the Continent in the manufacture and development of motor traffic. What I am afraid of is that this Bill may do something like the same thing with regard to aircraft.

Regulations have already been made with regard to sending expeditions to India. First, they go to Karachi, and then to Delhi. This has been done entirely under military auspices. I should like to know whether the right hon. Gentleman will allow the aircraft industry to run a flight of aeroplanes to Australia from this country, or will he restrict them absolutely to military men and military pilots. An association with which I am connected is anxious to make a trial of flying from London to Australia. The route as far as Karachi has been mapped out by the Government. Then to Delhi, afterwards to Calcutta and Singapore, touching the islands of Java, landing at Port Darwin in Australia. Then east or west or directly south to Adelaide, following the telegraphic line, running directly north and south. I want to know whether the Air Council will reserve to themselves all the rights of experimental flying from the United Kingdom to the various Dependencies. That is a matter which they might kill entirely by regulation.

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I had some little experience in the early part of the War as to the way in which the War Office look upon aircraft. I had occasion in 1915 to call at the War Office to introduce to the Transport Department a Bosch magneto, and the man who could make them, and at that time they were very much needed by the British Army; in fact, the transport was crippled for want of them. I saw an officer in the War Department and he told me he thought he could get five hundred a week at the time. I pointed out to him that Mr. Churchill was proposing to have a fleet of a thousand aeroplanes to be sent over the big towns of Germany, and that was a very

680

intelligent anticipation of Mr. Churchill in 1915. "Oh," said the major at the head of the Department, "nothing of the kind. Aeroplanes are of no use at all, except perhaps for scouting." And he turned down the proposition altogether. He said, "We cannot give up making our motors for our transports in order to make aeroplanes." The right hon. and gallant Gentleman says that he is not at the Air Ministry, but I hope that he does not know to whom I am referring, because I do not want him to know. That was the way in which, in 1915, I was met with regard to aircraft, and that sort of thing may happen in every Government Department. Therefore, while congratulating the hon. and gallant Member for Harrow (Mr. Mosley) upon his eloquent speech, and the way in which he developed this particular point, namely, the dead hand of bureaucracy upon progress in commerce, I should like to have some assurance from the hon. and gallant Gentleman that he does not contemplate keeping that dead hand upon aircraft navigation for ever and ever, but that he will at the earliest possible moment turn it over to the civil authority. A great French flyer is contemplating making a flight from Paris to Australia, and, if any difficulty is put in our way by the War Office or Air Ministry, I

## Notes on "Civil Aviation"

am afraid that the French will be first in the field. I might call the attention of the right hon. and gallant Gentleman to the report of the Aerial Transport Committee, at the end of which it says: "It is a matter of urgent necessity to establish a system of propaganda throughout the Empire in order to convince the whole nation of the vast importance and possibilities of aerial transport, and to familiarise the governments and local authorities with the subject. There is evidence of the initiation of such a system in every country." Undoubtedly, Germany and France and America and other countries will leave us far behind if the dead hand of bureaucracy is permanently planted upon the industry. The greatest objection which I have to this Bill is that which I have mentioned before and which has been mentioned many times in connection with similar Bills. It is that these Regulations for all practical purposes are made without any power in this House of controlling them in any way. My hon. Friend the Member for Twickenham (Mr. Joynson-Hicks) says that the ownership of the air is in the owner of the land. It is an ownership from the centre of the earth right up into the skies as far as you

681

can get. I very much question whether that is still the law. I am myself a lawyer, and I may say that I differ from him. We had a Bill in this House with regard to oil found under land, and it was very much questioned whether the owner of the land had any right in the oil. That question has never yet been settled. I dare say the same thing would occur with regard to the air. I live in a small place with a few fields round me, and I have within two or three miles of me the largest aeroplane station in England. They have been continually coming over my ground, flying so low that they wave to me below—a most dangerous thing to do—and looping the loop. I do not believe if I went to the Law Courts that they would grant me an injunction and say that I could prevent them flying over my ground. I see that the title of this Bill is the Aerial Navigation Bill. We talk about the Air Ministry and the Air Council. Why, therefore, have this awkward Greek word "aerial." I wish the right hon. and gallant Gentleman would consider whether it would not be better to give us a simpler word.

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Captain WEDGWOOD BENN I need not say that I have no intention of opposing this Bill. On the contrary, I take the opportunity of welcoming it for the one reason that it concentrates in the hands of the Air Ministry the various powers dealing with air-craft which it had been suggested might possibly be diffused among various Departments of the State. I want to ask the right hon. and gallant Gentleman who represents the Air Ministry one or two questions. Does the Bill give the Air Ministry the power required to enable it to undertake pioneer work in aerial navigation—the setting up of the aerial routes both in this country and in the Empire generally—which we suppose is going to be one of the chief duties of the civilian side of that Ministry's work? Secondly, is it not possible—this is rather a point that we may deal with in Committee—to limit the certification of aircraft to aircraft which are going to be used for public purposes, so that a private pilot will be at liberty to fly any aircraft? I say this because there will be a danger that unimaginative officials will not give either the encouragement or the scope to the private, adventurer which the progress of aerial navigation undoubtedly demands. It is said that there is a danger to the public, but it must be remembered that the danger primarily is to the pilot and pas-

682

senger in the machine rather than to the public, and we might suppose that alone would be a sufficient guarantee that no excessively dangerous experiments would be made. The hon Member spoke of us being powerless under this Bill. I am under the impression that the Orders must be laid on the Table of this House and must remain on the Table for twenty-one days within which it will be competent for any Member to move an Address for the revocation or alteration of any one of them.

Mr. DENNISS The hon. and gallant Member knows that it is quite useless in practice.

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Captain BENN The hon Gentleman will excuse me, but he is mistaken. On the contrary, this is exempted business, and we can go on debating an Address moved with regard to anyone of these Orders until the next morning. The right hon and gallant Gentleman in this Bill has at least given us the power to deal with the Orders when he brings them forward. The last Clause of the Bill says that the Act shall continue in force for one year. One would suppose that meant that the Act would expire at the end of the year, and that if it were not then renewed other legislation would be brought forward. The right hon. and gallant Gentleman knows, however, that there is a contrivance called the Expiring Laws Continuance Bill, and I should like to have from him the assurance that we shall not find in the Schedule of that Bill which is practically undebated the name of this Aerial Navigation Bill. I wish to ask those questions, and in the meantime to say that under the powers that he is taking much may be done by the Ministry over which he presides for the progress of this great science.

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General SEELY I can only speak by leave of the House, but as briefly as possible I will answer the various points raised. We have considered the points advanced by the hon. Member for Twickenham (Mr. Joynson-Hicks), and especially we have had in mind the recommendations of the Aerial Transport Committee, of which he was a very prominent member. The provisional Regulations which we shall draft, and which are the only ones to appear under this Bill, will in almost all respects follow the lines of those recommendations. Again, in addressing myself to all the hon. Members who have spoken, I would emphasise that this is an interim measure, and that we must later

683

have a larger measure, which will put in the form of law the whole of the arrangements for the regulation of flying in the same way as there are propel, regular Acts—as for instance, the Board of Trade Act—to regulate either land transport or sea transport. I

## Notes on "Civil Aviation"

would again emphasise that this is a Bill by which alone we are enabled to give facilities for private individuals to fly. Without it they cannot fly, and it is principally for this reason that I commend it to the House. The hon. Gentleman particularly asked a question as to certification. We propose that certification should be done daily by persons appointed by the manufacturers, with the approval of the Air Ministry. Thus you will not have perpetual inspection by Government Departments, which would involve an immense number of inspectors, or mean that the thing would not be properly done.

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Mr. JOYNSON-HICKS Does the right hon. and gallant Gentleman mean that every machine is to be inspected and practically certified every day? Supposing there is a line of aeroplanes running from London to Manchester, would they have to be inspected daily?

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General SEELY Yes. The criticism made to me when I met the British Society of Aircraft Manufacturers was that the provision was hardly necessary, because, of course, every owner of aeroplanes must inspect them. I am sure it is a wise provision, and I also think it is wise to leave it to the manufacturers to make the inspection as part of their regular duty by persons approved by the Air Ministry. Subject to that, I believe it will work well. Those, I think, were the principal points which the hon. Gentleman put to me.

§

Mr. JOYNSON-HICKS There was the legal question about the right of flying over other people's land. What are you going to do about that?

§

General SEELY I was going to deal with that in some general remarks with regard to the legal aspect in replying to several hon. Gentlemen who have spoken. By this Bill, which I hope will become an Act, we shall be able to do the things named in Clause 1, but that does not by any means include any of the things which we must do if we are to have a proper code of law for the air. They must be put in the larger Bill. The question of penalties for the forging of certificates, for instance, cannot be dealt with under this Bill. The

684

ordinary common and Statute law, as we know it, will have to be the law for the time being. If we were to attempt to make a code of law for the air, it would mean a very large Bill and involve long Debates. Therefore, this Bill only sets out to do that which I have described in my opening remarks, namely, to enable civilians to fly, with a minimum of interference on the part of the State consistent with the public safety.

My hon. and gallant Friend the Member for Harrow (Mr. Mosley), the youngest Member of this House, made a speech to which I am sure we were all delighted to listen as coming from one who left a most distinguished regiment to fly over the Germans, and who flew as long as he could until he met with a sufficiently hard bang to force him to return to his other duties. We congratulate him on his escape and upon his return to this House. In his excellent speech, however, he did not take into account my opening remarks in which I laid emphasis on the necessity of avoiding bureaucratic control. I will reply to him and to my hon. and gallant Friend the Member for Chatham (Colonel Moore-Brabazon) at the same time by saying that the whole object of the Air Ministry, I can assure them, as long as I am there—and I know I can speak for my right hon. Friend (Mr. Churchill)—will be to see that the State helps and does not hinder, that it does its utmost to encourage new designs of every kind, that it does not profess to be a grandmother in any sense, and that all restrictions possible shall be removed.

We are determined the State shall only endeavour to open the way to skill and energy. It will not try to hamper or thwart independence of thought or action on the part of those engaged. When I came across the Regulations drawn up in the ordinary form, in which, following the precedent in regard to land craft it laid down that aircraft should be examined as to its suitability and safety, I struck out the word "suitability," because it seemed to me that the State had nothing to do with that. If somebody proposes to fly from here to Australia we should be only too delighted to help them in every way consistently with the general safety. If they want to fly on a kind of machine entirely new to us which we may think ill-adapted for the purpose, we shall not stop them so long as we are satisfied that the machine is reasonably safe. We shall have

685

nothing more to say on that point. As to the activities of the Aircraft Ministry, we intend to give the fullest information in our power as to new discoveries, making, of course, exceptions in regard to military secrets, but the public will be at liberty to take out their own patents and keep their own secrets. That seems to be peculiarly the duty of the State in this entirely new form of locomotion.

§

Lieutenant Colonel MOORE-BRABAZON May they build machines without submitting designs to the Air Ministry?

§

General SEELY Certainly. We shall only insist that they are reasonably safe, as is done in the case of ships at sea. We propose to follow exactly the precedent set in that case. If a man chooses to build a vessel, however fantastic in appearance, or design, if it is reasonably safe, the Board of Trade makes no objection. The State must do its duty to see that there is reasonable safety. There were three definite points put to me by my hon. Friend the Member for Leith (Captain Wedgwood Benn). The first was as to pioneer routes. The opening of pioneer routes is done by the military at the present time, and if the State is going to do it it will be the Royal Air Force which will take the duty. At the present time we can do what we please within the limits imposed by



## Notes on "Civil Aviation"

Parliament with military and naval aviation, and if the Treasury approve of the expenditure necessary for opening up new routes, say, from Cairo to Karachi, this Bill will not help us, but it will enable people to begin experimental flying.

With regard to certificates for machines which are not to carry passengers, I have been asked if everybody is to be entitled to break his own neck. I say undoubtedly he is so entitled. After all, the risk to those below is similar only to the risk people have of being run over by motor cars. I do not think it is necessary to require any form of inspection of machines to be flown by men themselves, nor is there any need that they should have certificates, as is requisite in the case of those who are going to carry passengers, goods and, it may be, mails. The principle that you must take care of yourself is a good one. We look forward to people doing in the future what they did in the early days of flying. They will really be pioneers. They will strike out entirely new lines,

686

making machines to their own designs—designs which all sorts of wise people may think to be useless and unsuitable for flying. Finally, I have been asked for a very definite pledge on a very technical point. I am very glad to give it. My hon. and gallant Friend wanted to be assured that this measure will not be included in the Expiring Laws Continuance Bill, which is generally passed without debate. It shall not be put into that Bill, and I hope as I give this assurance the House will help me to pass the bigger Bill which we intend to present to Parliament and which will enable this Bill to become obsolete. I think I have answered all the questions put to me.

§

Mr. JOYNSON-HICKS There was a question with regard to liability for accidents. Are we going to do away with the common law question of negligence? Suppose I am killed by an aeroplane from above, will my executors have to establish negligence on the part of the aeroplanist, or would compensation be given merely because I was killed?

§

General SEELY I put that point to the Attorney-General, and he was unable to answer it. I do not know how it stands. I think probably that negligence would have to be proved in the case of air accidents as in the case of land accidents. But that is merely my own obiter dictum. It is a long time since I was called to the Bar and I cannot claim that it is a sound opinion. I do not think this Bill will alter the position in that respect, but I will make a note of the point. It is a subject which must be included in the larger Bill which I shall bring in at a future date. If any hon. Members have any suggestions they would like to make on the general question and will send them to me in the course of the next few weeks, I shall be most happy to consider whether they come within the scope and intentions of the larger measure, and, of course, within the agreement for international flying. It is quite likely, this being a new Service, that there are points we may have overlooked. I do not know whether it would be reasonable to ask the House to take the Committee stage of this Bill tonight. I am entirely in the hands of the House, but, in view of the fact that we shall be discussing the larger Bill before very long, perhaps hon. Members might be not unwilling to accept this suggestion. Question put, and agreed to.

Bill accordingly read a second time.

687

Motion made, and Question proposed, "That the Bill be committed to a Committee of the Whole House."—[General Seely.]

§

Capta in BENN Is it proposed to take the Report stage to-day?

§

General SEELY If we have the Committee stage, I think we might leave the Report stage over.

§

Mr. DEPUTY-SPEAKER If the Bill be not amended in Committee, there is no Report stage.

§

Motion made, and Question proposed, "That this House will immediately resolve itself into the Committee on the Bill."—[General Seely.]

§

Mr. JOYNSON-HICKS I have been scribbling down a few Amendments while the right hon. Gentleman was speaking, and I am quite ready to take the Committee stage now if he and the Clerk at the Table will assist me with my rather badly written Amendments. There are no particular Amendments I wish to propose, but I desire to raise a few points which one has not been able to mention in Debate. If the right hon. Gentleman will accept the spirit in which they will be put, I shall not oppose the taking of the Committee stage now.

§

General SEELY I will certainly give every assistance in meeting the hastily-scribbled notes my hon. Friend has mentioned. I would not have suggested taking the Committee stage now but for the fact that all the matters which come up in the temporary Bill have been touched on in Debate. We might endeavour to get the Committee stage now, and take the Third Reading later if the House so desire.

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Bill accordingly considered in Committee.

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[Mr. WHITLEY in the Chair.]

## Notes on "Civil Aviation"

CLAUSE 1.—(Power to Regulate Aerial Navigation.)

HC Deb 17 February 1919 vol 112 cc687-92

687

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(1) It shall be lawful for a Secretary of State by Order to regulate aerial navigation over the British Islands and the territorial waters adjacent thereto, and in particular, but without derogating from the generality of the above provision, he may by any such Order provide for—

(a) the grant, suspension, and revocation of licences to pilots and other persons engaged in the navigation of aircraft;

(b) the registration, identification, inspection, and certification of aircraft;

688

(c) the licensing, inspection, and regulation of aerodromes;

(d) the conditions under which aircraft may be used for carrying goods, mails, and passengers;

(e) the conditions under which goods, mails, and passengers may be imported and exported in aircraft into or from the British Islands, or from one of the British Islands to another.

(2) If any person contravenes or fails to comply with the provisions contained in any such Order he shall be guilty of an offence under the Aerial Navigation Act, 1911:

- Provided that if proceedings are taken by the Commissioners of Customs and Excise for contravention or failure to comply with any Regulation made under paragraph (e), the proceedings shall be deemed to be proceedings for the recovery of a penalty under the enactments relating to customs.

(3) Every Order made under this Section shall have effect as if enacted in this Act, but as soon as may be after it is made it shall be laid before each House of Parliament, and if an Address is presented to His Majesty by either House within the next subsequent twenty-one days on which that House has sat after the Order has been so laid, praying that the Order or any part thereof may be annulled, His Majesty may annul the Order or part thereof, and it shall thenceforth be void without prejudice to the validity of anything previously done there under or to the making of a new Order.

(4) The powers conferred by this Act shall be in addition to and not in derogation of the powers conferred by the Aerial Navigation Acts, 1911 and 1913.

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Mr. JOYNSON-HICKS I beg to move, in Sub-section (1), after the word "State" ["a Secretary of State"], to insert the words, "with the approval of a Select or Grand Committee of the House of Commons." The point I want to press is that from a constitutional point of view we ought to know a little more of these Regulations before the House parts with this Bill. I do not ask that the right hon. Gentleman should consent to refer the Bill to a Grand Committee, but would it not be possible, before the Report stage or before the Third Reading, to show some of us the Regulations? We really are giving a blank cheque to the Government to make any Regulations they like. However friendly we may be to the Government, however much we desire to help them, yet they ought to give us some undertaking that we shall see the Regulations before the House finally parts with the Bill.

§

General SEELY I quite appreciate that my hon. Friend does not press this Amendment, because in its form it would be a rather novel procedure. The real point he

689

raises is whether the House cannot have some say in these Regulations before it finally parts with the Bill. I have the draft Regulations here. It would be a great convenience to get the Bill, in order to commence civilian flying. Would it not be well for me to ask hon. Members to take the Committee stage now, then for me to circulate the draft Regulations to those interested, and then to take the Third Reading? Those of us who have been many years in the House of Commons know that all sorts of pitfalls may be encountered. Any group of Members might object very much to this, that, or the other, and we might not be able to get the Bill through. I wish I could meet the wishes of my hon. Friends without losing the Bill. I am sure they appreciate, especially those of them who have been in previous Parliaments, that any Minister who wants to get a Bill for this purpose is likely to meet difficulties. Perhaps I could pass the draft Regulations round now, although I am afraid that would not give time for consideration. I am in the hands of the Committee, but I give my assurance that everything done under this Bill, and all that is proposed, are with the intention of giving the greatest possible latitude for civilian flying while insisting upon public safety. When the Regulations are laid my hon. Friends will have an opportunity of debating them outside the ordinary Rules of the House at any hour of the day or night. I respectfully suggest that it would be best to pass the Bill, then for me to lay the draft Regulations at the earliest possible moment, then by question and answer to elucidate doubtful points, and finally to accept my assurance that everything shall be done in this matter to help and not hinder.

## Notes on "Civil Aviation"

§

Major Sir HENRY NORMAN We are all desirous to help the Bill, which is evidently necessary. It is exceedingly drastic, but in view of what the right hon. Gentleman has said and the spirit in which he approaches all of us to take a special interest in the air, we naturally desire to help him to the utmost of our power. At the same time, we do not like to let the Bill go entirely without any idea of some of the more detailed aspects of the Regulations. Would it not be possible for the right hon. Gentleman to circulate his Regulations among those specially interests, or to any Member who specially desires to see them, between the Committee stage and the Report stage? There will have to be a Report stage, because

690

there is one purely verbal alteration which I want to suggest, which I am quite sure will be immediately accepted, I do not think the circulation of the Regulations will involve any delay.

§

Mr. JOYNSON-HICKS May I suggest another way out of the difficulty, namely, that the right hon. Gentleman should circulate the Regulations to the executive of the Parliamentary Air Committee? It is only a voluntary Committee, but everybody interested in flying is a member of it, and we shall be glad to discuss the matter with the right hon. Gentleman.

Captain BENN The right hon. Gentleman has already promised to accept one Amendment which necessitates a Report stage. May I remind him that although what he has said may be true of other Parliaments, this Parliament is a Parliament in itself, and that he has not been met by any form of obstruction. Our desire is to get the Bill, but we also desire to have an opportunity of considering it in detail, and, in particular, of considering the Orders to be made under it. I therefore suggest that the right hon. Gentleman should give us one or two Amendments—he has already indicated he is prepared to do that—and then let the Report stage be put down for another day. No one will obstruct the progress of the Bill. In the meantime perhaps the right hon. Gentleman would circulate these Orders he proposes to make to the Committee on Air, and also to the Air Force Committee, which comprises all Members of the House who have served in the Royal Air Force during the War.

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General SEELY I should certainly think the best course will be to accept the suggestion made by the hon. Member opposite, and all we have to do is to make quite sure that there is a Report stage and pass rapidly through the rest of the Bill so that we may carry it out. I think that will probably meet the wishes of everyone. I will circulate the proposed Regulations—of course, they are only proposed Regulations now—to both the Committees which are referred to, and, of course, to any hon. Members who desire to see them. Then at a later stage we shall come to the Report stage and shall be able to approach it with full knowledge of what is done. Even in this, the model Parliament, obstruction may possibly hereafter be not entirely unknown, and I appeal to all my hon. Friends interested

691

in the Air Force to help us to get it through the important stage of Third Reading when the time comes.

§

Amendment, by leave, withdrawn.

Mr. DENNISS I beg to move, in Subsection (1), to leave out the word "aerial" ["to regulate aerial navigation"], and insert instead thereof the word "air."

§

General SEELY I entirely agree that the word "aerial" is a horrible word. It is so difficult to say. But at the same time it has been accepted for some time back as a proper term, and I cannot think of another. Air navigation, of course, has the objection that air is a substantive and not an adjective. My right hon. Friend tells me sea bathing has a substantive with it. It is perfectly possible that by the alteration of a title you may greatly inconvenience other possible words, but I will bear it in mind. If I can put it in on the Report stage I will. I share the hon. Member's objection to the term.

§

Amendment, by leave, withdrawn.

Captain BENN I bog to move, at the end of Subsection (1. b), to add the words, "used for carrying passengers, goods, and mails."

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General SEELY That is certainly the intention, but it is a little dangerous to accept words at a moment's notice which may, of course, have the effect, if you are not careful, of prohibiting you from accepting others. I think if we could have the Amendment in these words, "especially those used for the carriage of passengers, goods, and mails," that would meet the case, and the House would have my assurance that that is the intention. Then we shall safeguard the State if it has to inspect at some other time for some other purpose.

§

Amendment, by leave, withdrawn.

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Amendment made: At the end of Subsection (1, b), insert the words, "especially those used for the carrying of passengers, goods, and mails."—[Captain Benn.]

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## Notes on "Civil Aviation"

Sir H. NORMAN I beg to move, in Sub-section (1, e), after the word "goods" ["The condition under which goods"], to insert the word "and."

As this Sub-section reads it shows a rather improper use of the English language. I want to suggest that it should read as follows: "The conditions

692

under which goods and mails may be imported and exported and passengers transported."

§

Amendment agreed to.

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Further Amendments made: Leave out the words "and passengers."

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After the word "exported," insert the words "and passengers transported."—[Sir H. Norman.]

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Clause, as amended, agreed to.

17 February 1919 : HC Deb : Aerial Navigation Bill CLAUSE 2.—(Extension of purpose of Air Council.)

"The purposes of the Air Council shall include all matters connected with aerial navigation"

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Motion made, and Question proposed, "That the Clause stand part of the Bill."

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Mr. JOYNSON-HICKS I wish to ask a question as to the present position of civil aviation and the Air Council. We saw the other day that General Sykes had been appointed to deal with civil aviation and had resigned his position as a general officer. May I ask, not offensively, under what authority the Government appointed anyone to deal with civil aviation before passing this Bill. I have looked very carefully through the three Acts of Parliament which have been passed dealing with the air in 1911, 1913 and 1917, and there is no power at all to appoint anyone to deal with civil aviation. The Act of 1917, which constituted the Air Council, is purely a military Act.

The whole thing deals with the military position.

I see General Sykes is receiving some remuneration for his services.

I do not know how on earth it is done.

Someone has said, "This is a very curious Parliament and we do very curious things."

The Government has appointed this general officer to deal with a subject that he has no power to deal with under any Act of Parliament, and I assume they are paying a salary which they have no power to pay him at all. I should like a little information on that point. I am not quite sure how far the Air Council in its present form is the right body to deal with civil aviation. It is a purely military body, formed for military purposes and on a military basis, and you are going to put the whole control of civil aviation in this country—I am not using the term offensively—under a military autocracy.

I do not think that is right.

This Bill has come so suddenly and it is not being debated at any great length, but I think two Amendments ought to be made in this Clause.

I think the words "the purposes of the Air Council shall include all matters connected with aerial navigation" are a bit too wide. That power might include the manufacture of civil commercial aircraft and so forth. I think the words in the second line should be amended to include certification, inspection, and so forth. That would be ample to start with. Then I think there ought to be some civilian members on the Air Council. I would suggest a sub-section to the Clause to the effect that there should be civilian members attached to the Air Council to act only in connection with the question of civil aviation. The appointments would naturally be left entirely to the Government. I think the whole of the commercial side of aviation will feel rather seriously if they are put entirely in the hands of military officers. I have not the slightest word of complaint against the military officers of the Air Council, for whom I have the highest respect, but military officers do not always in a position of authority get on with the commercial world. I think it would be better that two or three members should be added to the Air Council for civilian purposes. Formally I move the omission of the Clause.

§

General SEELY In regard to the first point raised, namely, that there was no power to appoint Major-General Sykes as a member of the Air Council, the answer is that there was power to appoint him to look after civil aviation. We were so legally advised on the subject, but there was not power to appoint him a member of the Council. This measure when it becomes an Act will give us power to have a member of the Council for civil aviation. That is the object of the Clause. I can assure my hon. Friend that the vigilant eye of the Treasury would certainly never have allowed a salaried post to be improvidently made. That is one of the things on which they do keep the tightest outlook and the tightest hand, as I have reason to know. I think there is no doubt that legal power resided in us to appoint a controller of civil aviation. This Clause will give the man responsible for civil aviation a seat on the Air Council. In regard to the merits of that appointment, I would say that we were all exceedingly glad when General Sykes

## Notes on "Civil Aviation"

took the position, and I think the aviation world in general will be glad. When General Trenchard, I think with universal acclamation, came back as head of the military and naval sides of the Royal

694

Air Force, and General Sykes was approached with a view to his taking the civilian side, at any rate for the present, all those whom I was privileged to consult were unanimous in saying that with his peculiarly alert brain, which has been dealing for many months with the very problems on which aerial navigation is concentrating itself, namely, long distance flying in the air, we had an ideal man. It is quite true he is a soldier, but he has been a great many things besides, and the fact that he is now at his own request ready to serve civil aviation by severing his connection with the Royal Air Force, except so far as he remains on the retired list, will be an indication to the aviation world, to aircraft manufacturers, flyers and others, that he is whole-heartedly devoted to the interests of civilian flying. The reason why a soldier was selected is that just for the moment practically everyone who is interested in flying, with a few exceptions, has joined either the Flying Corps or one or other branch of the Service, and with hardly an exception all the pilots belong to the Royal Air Force. Thus for the moment it is almost certain that you will find the best man within the ranks of the Royal Air Force of the Army or the Navy. That that will continue to be so I do not say. I should say it will not, but at present it is the case.

With regard to making the Council more civilian in character, perhaps my hon. Friend did not observe that we have a considerable number of civilians on the Air Council. I shall, I suppose, shortly be demobilised. My right hon. Friend (Mr. Churchill) is already demobilised. A civilian, Lord Londonderry, who is a member of the Air Council, will represent the Department in the House of Lords. Then we have Sir Arthur Duckham, Sir James Stevenson and Sir John Hunter, the last still technically a member of the Council. Therefore, there is a large civilian element, and though some of these gentlemen are there specifically for the purpose of concluding contracts and generally winding-up the affairs of the War, one of them will certainly always remain, and I should think, as time goes on, it will probably be the case that the man to whom the destinies of civil aviation are confided will tend more and more to be a business man, a civilian, even though he may have served in the Royal Air Force. I hope that will satisfy my hon. Friend.

695

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Mr. JOYNSON-HICKS There is also the question of the very wide scope of the Clause.

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General SEELY I have made a note of that, and I hope the hon. Member will not press the point. I can assure him that we have no intention of going into the aircraft manufacturing business, and if we ever attempted to do it, what I say now would be brought up against us and make the thing impossible, for a Ministerial pledge is a Ministerial pledge that has to be kept as long as the Government survives. To confine it rigidly to the points specified would be inconvenient. I can assure the Committee that we have no ulterior motive whatever in making the Clause so wide. It is not unprecedented in its wide nature. It is necessary that the Air Ministry should have the power to act to the best advantage in all matters connected with aerial navigation or transport. We do not want to act in order to hamper the industry. On the contrary, as I have said more than once. But I think it is necessary that we should have the power whenever the occasion arises to make the necessary Regulations, that any other Government Department has, in regard to land or air transport.

Captain BENN I cannot support the hon. Gentleman behind me in regard to this Clause, because I understand it is a Clause by which the Air Council seeks power not only to deal with all these aerial matters, but to prevent other Government Departments interfering. That seems to be an extremely desirable thing. The air is an element that must be treated as a whole, and it must be controlled as a whole, so far as the State is concerned, in the hands of one authority. I would point out, however, that the civilian has a very proper and well-grounded suspicion of military control. The names of the most successful machines during the War prove how much we owe to the civilian manufacturer. I have no objection to the appointment of this brilliant officer (General Sykes) to the position of head of civil aviation, but the right hon. Gentleman must remember that the Government has been so constructed that the whole of this Air Ministry is put in what we think is a subordinate position to the War Office, and that emphasises tenfold the suspicion that the public must have of the military element in the Ministry. I hope myself that so far from military predominance after the War, this Ministry,

696

which deals with the most progressive of sciences, will be kept in touch with the most progressive of civilian opinion.

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Clause 3 (Short Title and Duration) agreed to.

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Bill reported; as amended, to be considered To-morrow, and to be printed. [Bill 6.]

25 February 1919 : HL : AIR NAVIGATION BILL.- Brought from the Commons; read 1a, and to be printed.

26 February 1919 : HL Deb : AIR NAVIGATION BILL : Order of the Day for the Second Reading read.

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## Notes on "Civil Aviation"

THE PARLIAMENTARY UNDERSECRETARY OF STATE FOR AIR (THE MARQUESS OF LONDONDERRY) My Lords, in rising to move the Second Reading of this Bill I ask your Lordships' indulgence, for, although I have spent a certain number of years in both Houses of Parliament, it has not been my privilege to fill such an important position as the one I occupy now in bringing to your Lordships' notice the Second Reading of a Bill of this description. I feel that at this late stage of the evening I should not be entitled to go into the briefest possible survey of the important matters which have actuated us in moving the introduction of this Bill. But I should like to draw your Lordships' attention to the fact, which has been forced upon our knowledge in the last few years, that the science of the air—a subject we have to regard in its entirety—although it has come quickly upon us, is something which we have to consider as controlling much of our everyday life. A Bill of this description is a measure which even the present generation quite a few years ago would have said would be introduced in a future which none of us would possibly see. I am anxious this evening to impress

384

upon your Lordships the importance of the measure I am introducing.

Hitherto there has been a prohibition of civilian aviation. Consequently, unless a measure of this description is passed, the progress of the industry and of the science itself will be retarded, and we shall be placed in an inferior position in the competition for supremacy in the air which I think we can claim to have at this moment, and which I sincerely hope we shall maintain for all time. We know that there have been various experiments from the earliest times of history with a view to obtaining the mastery of the air, but until the period which stretches over the last ten years we have never been able to say that we have achieved that supremacy and conquered that force of gravity which hitherto has dominated the universe. We are in an analogous position to our forefathers some eighty years ago when railway travelling was first inaugurated in this country, and I think that we are entitled to say that we shall be able to look forward in the future to as great an expansion of this industry of aviation as we have been able to see in railway travelling from the early years of the last century until now.

In making these general remarks I would venture to say a word of caution, and that is that while we are all optimistic and believe that there are immense possibilities in this great science, still we feel that any hasty legislation, or any steps taken without due care and consideration, will retard the objects in view and hamper and hinder those great purposes which we hope to see carried to successful fruition at no distant date. In 1914 the sole functions of aircraft were reconnaissances for the Army and artillery observation, and since then we have seen during the various stages of the war the great progress which aviation has made, and also the great achievement of aviation as one of the decisive factors in bringing about the termination of the great struggle which we are glad has ceased, we hope for ever.

The Bill which I am introducing to-day, as your Lordships are doubtless aware, is an enabling Bill to allow the Government to introduce those Orders which will regulate for the future civil aviation. Your Lordships are also aware that during the war a strong Committee—the Civil Aerial Transport Committee—has made certain recommendations for the regulation of aerial

385

transport when re-opened, which include the licence to pilots and the registry of machines. This Bill is to authorise the issue of Orders which will define what steps shall be taken to carry out these purposes. To carry out these recommendations will require permanent legislation; consequently this Bill is only a temporary measure.

There is also the question of inter-State flying by civil aircraft, which is now being considered by representatives of the Allied Powers in connection with the Peace Conference, for which an International Convention must be prepared and approved by the Allied Powers. To secure the passing of this Convention, and of permanent domestic legislation, will take a certain amount of time, and His Majesty's Government had these two alternatives placed before them. The first was to make temporary provision by emergency legislation, and the second was to postpone the re-opening of civil flying until such time as the permanent Act embodying the findings of the Civil Aerial Transport Committee and the results of the International Conference on Aviation could be enacted. His Majesty's Government decided that it was desirable to adopt the first of these two alternatives, and to provide, by means of the Bill which is now before your Lordships, for the regulation of civil aviation, embodying in Orders to be made under the Bill those provisions of the recommendations of the Civil Aerial Transport Committee which are suitable for the occasion. I desire to press upon your Lordships that this Bill is an enabling Bill only, and that the actual re-opening of civil aviation will depend upon the enactment of the Orders which are provided by this Bill. It will also be realised that, having regard to the enormous development of aviation during the war, it was impossible to revert to the old system of practically unrestricted flying which prevailed up to the beginning of the war. The matter is one which concerns the safety of the public, and therefore your Lordships will appreciate the necessity of the control of flying by His Majesty's Government for that most important purpose. Before the war the safety of the public on the ground was alone considered. With the expansion of aviation which we see coming it is obvious that the safety of the public in the air—if I may use the expression—must also be safeguarded. It will be seen that

386

provision is made in this Bill for laying all Orders under it on the Table of both Houses of Parliament. That gives an opportunity to either House to raise objection to what is contained in the Orders with a view to revoking those Orders if need be.

As regards the Orders themselves, I should explain that they are being drafted in the Air Ministry, and that at every stage of them the fullest possible consultation is proceeding with representatives of the aircraft industry and with representatives of the House of Commons, where, as your Lordships are aware, there is a Committee which sits for the purpose of considering these matters as they advance stage by stage. If your Lordships consider it right to have a similar Committee in this House—I know well that a

## Notes on "Civil Aviation"

great number of your Lordships take a deep interest in aviation—any recommendation made by that Committee will, I need hardly say, be most carefully considered by His Majesty's Government.

I would also explain that the basis of the Orders is the interest of public safety, and that all the provisions of them are being framed with that object in view, and will be as little restrictive as possible bearing that object in mind. Your Lordships are aware that in the discussion in another place certain Amendments were proposed. The contention was that this Bill was a restrictive Bill, and was inclined rather to hamper and hinder the industry than to give it the free scope which is necessary at these initial stages to allow us to extend the industry and to maintain supremacy over all other nations. I should like to emphasise this point, that it is necessary that regulations of licensing and of registration should be made in the interests of the safety of the public. Apart from what is necessary for that purpose, the desire of His Majesty's Government is in no sense to hamper civil aviation in this country.

In asking your Lordships to give a Second Reading to this Bill I would also crave your indulgence for a further point with regard to the importance of the Bill, without which the prohibition of civil aviation remains, as it is at present, in its most stringent form. I would ask your Lordships' permission to allow this Bill to pass through all its remaining stages to-

387

morrow. It is a measure of great importance, and I apologise to your Lordships for asking you to adopt a course which is distasteful to all of us. But when your Lordships realise that during all this time there has been this hindering regulation which has cramped the activity of those who are energetically disposed to concentrate all their powers into giving us the opportunity of keeping that supremacy which we have maintained and are proposing to maintain to its fullest extent, I feel that your Lordships will agree that the sooner we can have this Bill passed into law the better. I beg to move.

§

Moved, That the Bill be now read 2a.—(The Marquess of Londonderry.)

THE MARQUESS OF CREWE My Lords, I rise to congratulate the noble Marquess opposite on the very capable manner in which he has performed his task of explaining this Bill in, I fear, a very empty House. I do not propose to discuss the terms of the Bill. The noble Marquess made an interesting suggestion, as I understood, that a Committee of your Lordships' House might be formed which would act with the Air Ministry for certain purposes of administration.

I have no doubt that there are not a few members of your Lordships' House who are well fitted by experience and interest in the subject to become members of such a Committee, and I merely mention the matter in the hope that the noble Marquess will take an opportunity of bringing his suggestion to the notice of the House, or to individual members of it in some form, lest in present circumstances his suggestion should escape the notice of those who might be interested in it.

As regards the intention of the noble Marquess to move on behalf of His Majesty's Government to-morrow that Standing Order No. XXXIX. be suspended, I personally have no objection to raise to that course, as I understand that the matter may be somewhat urgent. Of course, it is impossible to say whether some noble Lord may not desire to move Amendments, but I have no knowledge that any one does, and, so far as my friends and I are concerned, we shall raise no objection to the course proposed.

§

On Question, Bill read 2a, and committed to a Committee of the Whole House.

27 February 1919 : HC Deb : AIR NAVIGATION BILL. - House in Committee (according to Order): Bill reported without amendment. Bill read 3rd time, and passed.

27 February 1919 : HC Deb : MESSAGE FROM THE LORDS. - They have agreed to the Air Navigation Bill.

01 March 1918 : The following is a classification by occupation of the men who went overseas, up to March 31, 1918 <sup>102</sup>:

Professional men.....	13,676
Employers and merchants .....	6,529
Clerical workers .....	52,124
Skilled labourers .....	160,198
Unskilled labourers .....	670,788
Farmers.....	51,284
Ranchers.....	3,210
Students .....	10,651
Total.....	364,750

By' clerical workers i2, of course , understood those engaged in clerical work of various kinds, in banks, mercantile institutions, companies and various similar activities throughout the country.

As to country - of the following statement the first two figures are the

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<sup>102</sup> House of Commons Debates, 13th Canadian Parliament, 1st Session - Vol. 1 page 936

## Notes on "Civil Aviation"

Department of Militia and Defence:  
Canada, off British descent ..... 14 7,505)  
Canada, off French descent. ,.....1,68  
England..... 12\_ 1,57 1  
Scotland ..... 37,496  
Ireland..... 12.:6 ý7  
M/aies.....3 54  
Other British possessions ..... . 648  
United States.....i 1Cioo  
Other countries ..... 10,021  
Total..... 3C14,7 2,0

Sailings by "Arms of Service" up to and including March 31st, 1918.

Officers and enlisted men sailed from Canada by "Arms of Service" up to and including 31 March 1918			
	Officers	Ranks	totals
Infantry	9282	242957	252239
Cavalry	629	13222	13851
Artillery	964	31371	32335
Engineers	508	10573	11081
Pioneers	101	3015	3116
A. M. C.	3179	11937	15116
A. S. C.	360	9128	9488
Cyclists	55	1489	1544
Forestry	400	12769	13169
Railway and Construction			0
Miscellaneous			0
Totals :	15478	336461	351939

I slΦall take it up ciause bx clause and mnake iapparentΦ the reasori wlΦy these wie are iΦΦvcsted xvith  
tlic espnsΦΦiΦ-iitx c f adiiiiuktering public affairs have reached flic caiieluc-;oen that lunie, titer xvy eau tflic el- lic met

THE END CAME ALMOST SIMULTANEOUSLY ' WITH THE PASSING OF THE MOST CRITICAL MOMENT IN THE GREAT GERMAN PUSH IN MARCH, 1918. ON THE FIRST DAY OF THE PUSH, MARCH 21ST, THE R.F.C. WAS HELD UP ALMOST ENTIRELY BY DENSE FOG, BUT FROM THEN ONWARDS ONE MAY SAFELY SAY THAT THE AVIATORS HAD THE TIME OF THEIR LIVES.

THEY LOST THEIR AERODROMES, THEY LOST THEIR KIT, THEY LOST AEROPLANES BY THE HUNDRED, THEY LOST THEIR STORES, THEY LOST THEIR SPARE PARTS, THEY LOST THEIR TRANSPORT, BUT THEY NEVER LOST THEIR SPIRITS. IT WOULD BE WORTH SOMEONE'S WHILE TO WRITE A BOOK ABOUT THE R.F.C. IN THE RETREAT ALONE. NOTHING HAS BEEN MORE GALLANT, AND SOMEHOW NOTHING HAS BEEN MORE COMIC, IN THE HISTORY OF THE WAR.

SOMEHOW PEOPLE GOT AWAY FROM THE FORWARD AERODROMES, SOMEHOW THEY GOT BACK TO THE REAR, SOMEHOW THEY FOUND NEW MACHINES, AND WHEN THEY FOUND THEM THEY PROCEEDED TO TAKE IT OUT OF THE HUN FOR ALL THEY HAD LOST.

## The People on the Ground.

The people in the air were magnificently backed up by their own people on the ground.

No. 2 Aircraft Supply Depot, which had been built as if it were intended for a permanent aircraft factory, had to be evacuated.

1. The personnel and as much of the material as was possible was loaded up on trucks and dumped down on a bare plain by the sea. coast in pouring rain.
2. They had no sheds, and they had to find Bessonneau marquees where they could.
- 3.
4. Three days after they left their old home, and with only one Bessonneau as a workshop, they had turned out their first rebuilt machine, and from then onward they never stopped work day or night till the danger was over.
- 5.
6. The men slept in the open, under lorries and tenders, under shelters made of condemned wings.
7. They had no cooking arrangements, they lived as hardly as the retreating infantry.
8. And all the time they carried on the delicate and vital work of rebuilding and tuning machines and engines.
9. The squadron mechanics at the aerodromes worked till the last moment to get machines away.
10. At some aerodromes repairs were only done in time for mechanics to start up the engines and climb into the passengers' seats of the machines as Hun shells or bullets began falling in the sheds.
11. In some places ground officers and mechanics set fire to their sheds and bolted out of one side of the aerodrome as the enemy's infantry came in at the other.
12. It was a wonderful show, and one honestly believes that most of the R.F.C. people enjoyed it.
13. At any rate, not one to whom one has talked about the retreat would have missed it for a fortune.

01 April 1918 : RNAS consists of 67,000 (XXX) officers and (XXX) men, 2,949 aircraft, 103 airships and 126 coastal stations.

01 April 1918 : RFC consists of ??,000 (XXX) officers and (XXX) men, ??? aircraft, ?? airships and ???

01 April 1918 : RNAS merges with the Royal Flying Corps to form the Royal Air Force. The leading RNAS pilot is Canadian Raymond Collishaw with 60 victories. The same day, the Women's Royal Air Force (WRAF) is created. Between 01 April 1918 and 11 Nov 1918 a total of 31,090 women will volunteer to serve in the WRAF, their commitment to support their country. Most women serve in Britain, but about 500 will serve in Germany and France in 1919. The WRAF of WW1 is de-mobilised and disbanded in 1920.



01 April 1918 : UK AID Director, Lt-Col Bagnall-Wild, becomes a brigadier-general.

April 1918 : Hugh Trenchard summoned to Buckingham Palace to explain his resignation to King George V.

1. Trenchard tells the King: "Rothermere [a newspaper magnate] is impossible to work with"
2. Trenchard questions Rothermere's "basic competence to be a Government Minister, let alone lead the new "Air Ministry".

Trenchard's comments got back to the Prime Minister, Lloyd George.

15 June 1918 : Hugh Trenchard appointed General Officer Commanding, Independent Air Force [soon to be the Royal Air Force].

17 April 1919 : Secret Session of Canadian House of Commons : commons are told the "Allied armies face possible defeat".

19 April 1919 : Conscription bill is passed in Canada.

Spring 1918 : Canadian government proposes [to the UK Government] to form a wing of eight squadrons for service with the Canadian Corps, France.

## Notes on "Civil Aviation"

30 April 1918 : the Canadian High Commissioner in London suggests that the government consider forming a Canadian Air Force (CAF) in England. His proposal was based on the fact that so many Canadians were already serving in the Royal Air Force, and they had expressed a desire to serve in Canadian Squadrons. In considering the proposal, the Canadian government made a study in July and discovered that some 13,000 Canadians were serving in the RAF, of whom 850 were on secondment from the Overseas Military Forces of Canada. This study finally brought the Canadian Privy Council around to discussing the possibility of forming Canadian squadrons within the RAF, with the eventual aim being the formation of the Canadian Air Force.

by Summer 1918 : At least one-quarter (possibly one-third) of the RAF was Canadian. The British are reluctant to permit a major reorganization (and disruption) of their aerial service just as the war was reaching a successful climax.

23 May 1918 : BRIG.-GENERAL DUNCAN SAYRE MacINNES, C.M.G. D.S.O.. Royal Engineers (Born at Hamilton, Ontario, July 19. 1870 to son of the late Donald MacInnes, of Hamilton, Canada, a member of the Senate) He entered the Royal Military College, Kingston in 'September, 1887, and passed out "first", obtaining a commission in the Corps of Royal Engineers on July 16, 1891. On July 18, 1894, he became a Lieutenant; April 1, 1902, a Captain; in 1911 a Major; in 1915 Lt. Colonel ; and held the rank of Brig.-General at the time of his death. In 1895-6 he was in the Ashanti Expedition and was honourably mentioned and received the Star issued for the campaign. He was engaged in the erection of the fort at Coomassie where he afterwards acted as Resident. In 1900 the garrison of this fort successfully held out against 15,000 Ashantis and General Sir James Willcocks speaks of it in his book, "From Kabul to Kuraassi, " as "the best defensive post I have seen in West Africa." From 1905-1908 he was on the Staff in Canada, first as D.A.G.M.G. at Halifax, and then as D.A.A.G. During these years he was responsible for planning the defences of Halifax. In 1910 he was gazetted G.S.O. (3rd grade) under the Director of Military Training at the War Office ; Having graduated at the Staff College, Camberley, he was appointed a General Staff officer in the Department of the Director of Military Training at the War Office, and was also one of the War Office members of the Royal Engineer Committee. Subsequently he was appointed a member of the Directing Staff of the Staff College, an appointment he was holding when the war broke out. In 1912 he was secretary of the Royal Flying Corps Committee. The result of this Committee led to the formation of the Royal Flying Corps. In 1913 he was appointed G.S.O. (2nd grade), to the staff of the Staff College. On the outbreak of war he proceeded at once to France. After taking part in the retreat from Mons, for which he received the personal thanks of one high in command. He was wounded in November, 1914. The wound partially disabled his right hand. In 1915 he served at the War Office as Assistant Director, and in 1916-17, as Director of Aeronautical Equipment. In the following year he served as an Assistant Director in the Department of Military Aeronautics at the War Office, and in 1916-17 was Director of Aircraft Equipment. For his services he received the C.M.G. As Director of Aircraft Equipment Gen. MacInnes had to face a most arduous task. It fell upon him to evolve from the formless muddle of 1915 some regular scheme for organising and increasing aircraft production simultaneously.

All those who served with him at that period bear witness to his unflagging zeal and to the amount of personal effort which he expended. If hard work on the part of one man could have produced the necessary aeroplanes and engines Gen. MacInnes would assuredly have obtained them. Despite an infinity of natural obstacles and personal hindrances he succeeded in effecting remarkable increases in output, and, at the same time, he won the personal affection of all those who worked with him or under him. The intensity of his efforts nearly broke down his health, but before he left the War Office to take a command in the field he had done much spadework which afterwards proved of high value. Full recognition was given to his services when, at a dinner given to him on his departure, the Air Minister (only recently appointed Director-General of Aircraft Production) referred in the highest terms to the worth of his achievements in laying the foundations of aircraft production on a thoroughly sound basis. His name deserves to live in the history of military aeronautics as one of those who helped the R.F.C. out of its blackest days.

"The Aeroplane," of May 29. 1918;

and a General writes, "I think it is only those few people who worked with him in the early part of the war who really recognize how much the Royal Air Force owes to his untiring energy and splendid qualities. I never met a man who worked so hard and so conscientiously, and this in spite of the fact that he was suffering from the effects of a wound, and of general bodily ill-health brought on by the trying time that he had had during the retreat."

In March, 1917, he reverted to Colonel's rank in order to return to the Front, and became Commanding Royal Engineer to the 42nd Division. Nine months later he was appointed Inspector of mines at Headquarters, with the rank of Brig.-Gen. He was killed in action on 23 May 1918 and buried at Staples on May 25th.



## Notes on "Civil Aviation"

June 1918 : London, UK : 24 year old William Avery "Billy" Bishop appointed to the Staff of the Air Ministry,

June 1918 : Captain Brian Peck, an instructor in the Canadian-based RAF training scheme, together with a mechanic, Corporal E.W. Mathers [the Aerial League of the British Empire and the Royal Air Force]. <sup>103</sup>

23 June 1918 : The first airmail flight in Canada. A Military JN4 aircraft piloted by Captain Brian Peck, an instructor in the Canadian-based RAF training scheme, together with mechanic Corporal E.W. Mathers carry a mailbag with 150 letters from Montreal back to Toronto, complete with special envelope cancellations dating the flight <sup>104</sup>

28 June 1918 : world-wide League of Nations founded in Paris. <sup>105</sup>

09 July 1918-Katherine Stinson-Carries the first airmail for the Canadian government. Her Calgary to Edmonton air mail flight was the second-only such conveyance in the dominion and is logged as PF-7 in "The Air Mails of Canada and Newfoundland"

5 August 1918 the UK Air Ministry authorizes the formation of two RAF squadrons to be manned entirely by Canadians squadrons, one a fighter squadron and the other a bomber squadron. (Canadian Order-in-Council confirms the formation of the Canadian Air Force (CAF) on September 19 for "the purposes of the present war")

05 August 1918 : William Avery "Billy" Bishop transferred to "Canadian Headquarters", promoted to Lt. Col.

What would become of the fledgling CAF?

"In the immediate aftermath of the First World War, Canada's need for an air force was not readily identifiable," <sup>106</sup>

"The country faced no discernible external threat. Canadians had little appreciation for expenditures on such esoteric military commitment".

Broadly, the statement made by Canada of her position, in which the Imperial Government concurred, was that for matters of military operations the Canadian Forces in the Field had been placed by the Canadian Government under the Commander-in-Chief, British Armies in France ; in matters of organisation and administration, the Canadian Government still retained full responsibility in respect to its own Forces.

It was clear that matters of organisation and administration would frequently have a direct bearing upon military operations and discipline, and vice versa , and it was agreed that in such cases these matters should be made the subject of conference between the Canadian and Imperial Authorities.

General Headquarters, by the Canadian Corps, and by Canadian Units on Lines of Communication, with results which have proved highly satisfactory to all concerned.

The Headquarters of the Section under the command of Brigadier-General J. F. L. Embury, C.M.G., are on the Rue de la Chaine at Montreuil, where are the General Headquarters Staffs of the British Forces in France.

On the signing of the Armistice, the Section was fixed with greater responsibilities consequent upon the movement of troops from the Lines of Communication to England,

### Engineer Training.

The importance of efficient Engineer Units in the field cannot be over-estimated.

The greater the knowledge and skill of their personnel the more vital their value to the fighting troops.

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<sup>103</sup> <https://legionmagazine.com/en/2005/11/up-with-mail/#sthash.RWIABB8L.dpuf>

<sup>104</sup> <https://legionmagazine.com/en/2005/11/up-with-mail/#sthash.RWIABB8L.dpuf>

<sup>105</sup> Journal of the Parliaments of the Empire Vol. I.-No. 1. January, 1920. pg 87 -

<sup>106</sup> W.A.B. Douglas - official history of the Royal Canadian Air Force - Vol. 2



## Notes on "Civil Aviation"

Skilled workmen are essential, and carpenters, bricklayers, masons, iron-workers and men drawn from similar trades, were selected for the Canadian Service.

The Engineer for service in the field must, however, first be made a fighting man, and the military efficiency of the Canadian Engineer was established at the Canadian Engineers' Training Centre at Seaford.

Here his technical knowledge was adapted to his military duties and he was given instruction in such special subjects as the construction of trenches, dug-outs, headquarters, gun-emplacements, wire entanglements and concrete and timber shelters. Road repairing, water supply, bridge building, pontooning and the rehabilitation of devastated areas, were also included in the training of the Canadian Engineers.

In the mounted wing, recruits were taught to ride and drive and to operate the transport equipment of the unit.

### TRAINING OF INSTRUCTORS.

(a) Canadian Infantry Instructors 5 Fool.

The maintenance of large drafts of officers necessitated a constant supply of highly trained and competent instructors, both of commissioned and non-commissioned rank.

### CANADIANS AT IMPERIAL SCHOOLS.

While every effort has been made to render the Canadian Forces self-supporting it has, on occasion, been considered advisable to take advantage of the facilities offered by some of the schools of instruction provided by the Imperial Authorities in England.

In some cases this procedure was adopted in order to effect economy, notably in regard to Camouflage and Wireless Telegraphy, as there was not a sufficient number of Canadians requiring instruction in these subjects to justify the establishment of separate schools.

In other cases attendance at Imperial Schools was desirable in order to standardise instruction in special subjects.

One of the most important schools of instruction established by the Imperial Authorities during the War was the Senior Officers School at Aldershot, which was designed to prepare suitable officers for the position of Battalion Commanders.

The course was of three months' duration and the 135 Canadian Officers who passed through this school were all reported on very highly.

During the year prior to the Armistice, 11 Canadian Officers also attended the Senior Staff Course and 27 Officers the Junior Staff Course at Clare College, Cambridge, and in every case these officers were subsequently recommended as competent to fill appropriate staff positions.

It is, indeed, a matter for congratulation that Canadian officers and non-commissioned officers attending Imperial Schools have throughout acquitted themselves with credit.

### INSTRUCTORS FOR THE AMERICAN ARMY.

In January, 1918, a request was received from the War Office for the services of a number of Officer Instructors to proceed to the United States, together with a number of noncommissioned officers, to advise and assist in the training of the American Army for the Field.

A party of Specialist Instructors, consisting of twenty-five officers and

twenty-five non-commissioned officers, was

accordingly selected and despatched to the United States to work under the direction of the British Military Mission.

These officers were distributed amongst the various training Camps of the American Army and were attached to American Formations then in process of organization, their services in every case giving the highest satisfaction.

### SECONDED OFFICERS.

at the date of the Armistice the number of Canadian officers attached or seconded to the Imperial Troops or other Forces outside the Overseas Military Forces of Canada was 1,281.

Of these 1,281,

824 were seconded or attached to the Royal Air Force, of which

- 511 were Flying Officers,
- 57 were Administrative, Technical or Instructional Officers and
- 256 were under instruction in aviation.
- Every facility has been granted to Canadian officers desiring to serve with the Royal Air Force as Flying Officers, but

## Notes on "Civil Aviation"

- Service on ground duties:
  - has not been encouraged, except in the case of officers specially qualified, or
  - in the case of Flying Officers unfit for further service in the air.

On November 11, 1918,

384 Canadian officers were seconded to the War Office for Military duties. Of these

133 were seconded for duty on the Lines of Communication,

8 were employed with the Salvage Corps and

18 with the Labour Corps.

20 officers were holding other appointments with Imperial Formations,

9 were employed as Instructors at Army Schools and

27 were with the Railway Transport Service.

57 officers were with the special Military Mission, including:

the British Military Mission to the United States of America, and

the North Russian Mission.

14 were serving with the Royal Garrison Artillery, and

25 Medical Officers were on loan to the Royal Medical Corps.

73 officers were employed on various other duties.

8 officers were attached to the Admiralty and

67 officers, possessing special qualifications, were employed in various other Departments of the British Government.

The pay and allowances to officers seconded or attached for purely Military purposes is borne by the Canadian Military Funds ; but pay and allowances of officers seconded for semi-military or civil duties is refunded by the Imperial Government.

The general question of the incidence of the cost of the pay and allowances of Canadian officers, seconded or attached to the War Office, is now the subject of negotiations between the Imperial and Canadian Governments.

In view of the cessation of hostilities, the War Office has been requested to return all Canadian officers seconded or attached to the Imperial Forces, other than those serving with the Royal Air Force, as soon as their services can be spared, and no further attachments or seconding will be carried out.

The whole question of those officers who wish to remain in the Royal Air Force is receiving special consideration.

Originally, the administration of Military Law affecting the Canadian Troops in this country was carried out solely by the Imperial Authorities acting through the Army Council and the General Officers commanding the different Imperial Commands. Since December, 1916, however, this position was carefully but steadily modified by the adoption of the principles of control of Canadian troops in England by the Canadian Government through the Minister, Overseas Military Forces of Canada and his Military Advisers. The first modification arose in connection with the applicability to Canadian Troops of the Royal Warrant for their pay, etc., and early in 1917 it was established that Canadian Orders in Council and Canadian Pay Regulations should govern this subject exclusively.

Since then the principle has been extended to all disciplinary regulations. King's Regulations (Imperial) are still, it is true, in general use, but this is for the most part a matter of convenience and it is recognised that they are only applicable where they are consistent with Canadian Regulations bearing on the same subject. Army Council Instructions and Routine Orders are only made applicable to the Canadian Forces when considered desirable by the Canadian Authorities. No Imperial Order or Army Council Instruction is applicable to the Canadian Overseas Military Forces unless made so in Headquarters Canadian Routine Orders.

### DISCHARGES IN ENGLAND

Prior to the Armistice the discharge of Canadian Other Ranks in England might be roughly divided into two classes—those who were discharged in order that they might accept commissions or be re-engaged on some branch of the Imperial Service, and those who were discharged to civil life or to engage in work of National Importance. Those of the first class included soldiers whose applications for training with a view to commissioned rank in the Imperial Service had been favourably considered and those who had undergone a course of training at a Cadet School and had been granted a commission in the Imperial Army. It also included those who had been granted commissions under the Admiralty and those who had been appointed Flight Cadets in the Royal Air Force.

The second class consisted of men who might have been asked for by the Imperial Authorities for work of National

## Notes on "Civil Aviation"

Importance in such departments as the Ministry of Munitions, the Ministry of Food and the Ministry of Shipping. Such men were usually in a low category, and in most cases it was considered that they would be of greater value if they were employed on such work rather than if they continued to serve in a Military capacity. In the same class also came the very infrequent cases of men who were discharged in England on compassionate grounds and also those cases of soldiers boarded for discharge or invaliding to Canada on account of medical unfitness, who had applied for discharge in England.

In respect to the last-named cases it was the settled policy of the Canadian Government that members of the Canadian Forces found no longer fit for War service should be discharged in Canada, and that discharge would not be permitted in England except under very exceptional circumstances and where grave hardship would otherwise be caused to the individual concerned.

It is difficult to ascertain the number of Canadians who have been in the Royal Flying Corps, the Royal Naval Air Service, and later the Royal Air Force, at any given date, for the reason that they have entered these Services through so many different channels.

They have, however, entered through three main channels.

- 1) officers were seconded to the Air Forces from the Overseas Military Forces of Canada. These officers still remained Canadian officers, although so seconded, and were liable to recall, if necessary.
- 2) non-commissioned officers and men were discharged from the Overseas Military Forces of Canada for the purpose of entering the Royal Air Force. This they did in large numbers, receiving commissioned rank in it as soon as they qualified.
- 3) a very large number of cadets were enlisted by the Imperial Authorities in Canada. At no period were these latter under the direction of the Overseas administration, but were in the same position as if they had enlisted in England.

The following statement shows the numbers of Canadians who have entered the Royal Flying Corps, the Royal Naval Air Service, or the Royal Air Force in the manner indicated :—

1. Officers seconded or attached to the R.F.C., R.N.A.S., and R.A.F. up to December 31, 1918 1,239
  2. Other ranks of the Overseas Military Forces of Canada transferred to the above from June 1, 1916 to December, 31, 1918 2,721
  3. Cadets enlisted in Imperial Authorities to the above Services Canada by the and despatched 4,280
- Total 8,240

In addition to the above a number of other ranks, who subsequently received commissioned rank, were transferred to the Royal Air Force prior to June 1, 1916, but the exact figures are not known. Also a certain number of Canadians came over at their own expense to England and joined the Flying Services, while a certain number who came over to join British Regiments have also subsequently transferred to the Royal Air Force.

At the date of the Armistice there was a large number of cadets in course of training in Canada who, as a consequence of the Armistice, did not come Overseas. There were also a very considerable number of other ranks employed in Canada by the Royal Air Force, and although it is impossible to give exact figures, there have been in the Air Force probably well over 13,000 Canadians of all ranks.

Those mentioned in the first category of the above statement have been issued with pay from Canadian funds ; those mentioned in categories two and three are paid by the Imperial Authorities.

There have also been a number of Canadians who have served in the ranks in the Air Forces in England and France, amounting to approximately 350. Although the Royal Air Force was entirely under the direction of the Imperial Authorities, yet, in view of the large percentage of Canadians included in its personnel, it was felt by the Minister that it was proper that some action should be taken to recognise their Canadian identity, and to ensure that a record of Canadians in the Royal Air Force and of their exploits should be kept.

Accordingly negotiations were entered into with the Secretary of State for the Air as a result of which the following arrangement was come to :—

1. The Royal Air Force agreed to furnish the Minister with a Nominal Roll of Canadians in the Royal Air Force, and to advise him from time to time of all accretions to and deductions from it.
2. All Canadians in the Royal Air Force were to be permitted to wear a Canadian badge either on their shoulder straps or on their sleeve.
3. It was agreed to give Canadians representation on the Royal Air Force Headquarters and Staff.
4. A monthly statement of the exploits of Canadian Airmen was to be furnished to the Minister, with a view to its dissemination to the Canadian public.

## Notes on "Civil Aviation"

5. It was agreed in principle that Canada should have a Flying Corps of her own, which, while distinct in its organisation and administration, would form part of the Royal Air Force for the purpose of operations in the Field.

As a result of the above the position of Canadians in the Royal Air Force was put on a basis more satisfactory to the Canadian public, as well as to the officers themselves. It will be observed that the question of forming a separate Canadian Air Force was taken up at this time, and certain proposals agreed to. The Section succeeding this deals with that subject.

### Canadian Air Force <sup>107</sup>

In 1918 the question of forming a Canadian Air Force, distinct from the Royal Air Force, occupied the attention and received the careful consideration of the Minister. Previous to this year, for various reasons, it had not been considered in the best interests of Canada or the Empire as a whole to enter on a separate programme in this connection. As the war proceeded, and as it became apparent that a Flying Corps would be an essential and important part of any Canadian post-bellum military organisation, as well as likely to have a considerable influence on the development of commercial aeronautics in Canada after the war, it was resolved to take such steps as were necessary to provide Canada with, at least, a nucleus of such an organisation. It was fully realised that any such Force must of necessity be confined within small dimensions, because any attempt to withdraw Canadian personnel from the Royal Air Force in large numbers would have had a most prejudicial effect on the efficiency of that Force. Further, the expenditure involved in the maintenance of a large Air Force would have been very great.

**As mentioned in the last Section**, this matter had been the subject of discussion between the Minister and the Secretary of State for the Royal Air Force in the early part of 1918, and it had been agreed in principle between them that Canada should have a Flying Corps of her own.

This was immediately followed up by further negotiations, and a memorandum setting out tentative arrangements for the organisation of a Canadian Air Force was drawn up between the Minister and the Secretary of State for the Royal Air Force, and definitely settled July 8, 1918.

This memorandum was later embodied as part of the Order in Council which, subsequently, confirmed the agreement.

The provisions of the Order in Council were substantially as follows :

—

- (a) That authority be granted for the formation of a Canadian Air Force and of Service Units of such Air Force in accordance with the terms of the memorandum marked "A," which memorandum had been approved by the Secretary of State of the Royal Air Force.
- (b) That further Service Units of said Canadian Air Force be formed from time to time as and when the same might be approved by the Minister of Overseas Military Forces of Canada and the Secretary of State for the Royal Air Force.
- (c) That the Canadian Air Force form a part of the Overseas Military Forces of Canada and be subject to the provisions of the Militia Act of Canada.
- (d) That the Canadian Air Force be under the same establishment as may from time to time obtain in the Royal Air Force.
- (e) That the Minister of Overseas Military Forces of Canada be empowered from time to time to take any and all action that he might deem necessary for the formation, extension, organisation, and administration of the Canadian Air Force.

Provisions of Memorandum.—

The memorandum referred to, provided [inter alia / **among other things**]

- 1. That the formation of two Canadian Air Squadrons should be proceeded with forthwith.
- 2. That these Squadrons should be organised in England by the Overseas Military Forces of Canada in conjunction with the Royal Air Force.
- 3. That the type of Unit and equipment should be decided by the Air Council.
- 4. That the personnel of the Squadrons should be drawn as follows :— \*
- (a) Officers. From officers of the Overseas Military Forces of Canada who are seconded to the Royal Air Force and who were recommended by the Air Council ; and from officers of the Royal Air Force who were Canadian citizens and who are available and recommended for release by the Air Council, such released officers to be replaced at once by Overseas Military Forces of Canada.

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<sup>107</sup> A. E. KEMP. REPORT of the "MINISTRY of Overseas Military Forces of Canada" pages, 1918 349 - 354 - LONDON : PRINTED BY AUTHORITY OF THE MINISTRY, OVERSEAS MILITARY FORCES OF CANADA.

## Notes on "Civil Aviation"

(b) Other Ranks. By the transfer of other ranks of the Royal Air Force who were Canadian citizens and who can be released by the Air Council ; and by enlistment, or transfer from other Canadian Services of men with suitable qualifications.

5. That the Canadian Government should assume responsibility for assisting in the formation of the Squadrons by the provision of necessary personnel and for the pay' and allowances of such personnel, as well as for the supply and reinforcements for Service Squadrons.

6. That the Air Council (Imperial) should assume the responsibility for the command and administration of the Canadian personnel when in a theatre of war or under training in Great Britain, and for the provision, maintenance, and replacing in all cases of machines, tools, technical equipment and supplies necessary to maintain the said Forces ; further, it was to be responsible for the necessary training facilities.

Organisation.—In accordance with the above a Canadian Air Force Section of the Canadian General Staff was created for the purpose of carrying out the organisation of the Squadrons. Steps were taken to procure the necessary personnel in accordance with the provisions of the memorandum, and a selection of officers was made, representative of the best traditions of Canadian aerial fighting. The other ranks were selected from Units of the Overseas Military Forces of Canada, special attention in the selection being paid to their civil occupation, so that the men most suited to mechanical work might be obtained. The types of Squadrons decided upon were a single-seater Scout Squadron and a day Bombing Squadron. These were organised in England, and when organised went into quarters at Upper Heyford, near Oxford. It was, of course, intended that these Squadrons should be trained and sent to France to take their place in the field as fighting Units.

Training.—Their training proceeded along the lines necessary to prepare them for that purpose, but as a result of the signing of the Armistice they were not required in France and their training was then specially directed to fit them for post-war flying, and to giving them instruction in other branches of aeronautics likely to prove beneficial to Canada in the future. Special attention was paid to wireless training, photographic training, aerial geographical training and cross-country flying. In addition, steps were taken to complete the organisation of the Canadian Air Force so that, though small, it might provide a fully-developed organisation on which might be based any future organisation in Canada.

To effect this the following establishment has been authorised :

- i. A Director of Air Service, who will be the Officer Commanding the Canadian Air Force and will advise the General Staff on matters relating to it. He will have to assist him in his duties a Staff Captain, and a Staff Lieutenant along with four other ranks.
- ii. A Wing Headquarters consisting of a Lieutenant- Colonel, who will have command of the two Squadrons, and who will have to assist him in his duties a Captain for administration, a Captain for technical duties, and a Lieutenant for armament along with five other ranks.
- iii. No. 1 Squadron (a Scout Squadron) consisting of 18 aeroplanes commanded by a Major with three Captains, Flight Commanders, and 18 Flying Officers of the rank of Lieutenant. In addition, one administrative and one technical Lieutenant are provided for. The other ranks for this Squadron total 159.
- iv. No. 2 Squadron (a Day Bombing Squadron) consisting of 18 aeroplanes with one Major Commanding, three Captains, Flight Commanders, 18 Flying Officers with three additional officers and 160 other ranks.
- v. A Technical and Suppty Branch consisting of a Headquarters, Technical Branch and a Supply Depot. The work of this Branch is described in part in the Section which follows—the Bureau of Aeronautical Information established in the summer of 1918 having been absorbed into this Branch.

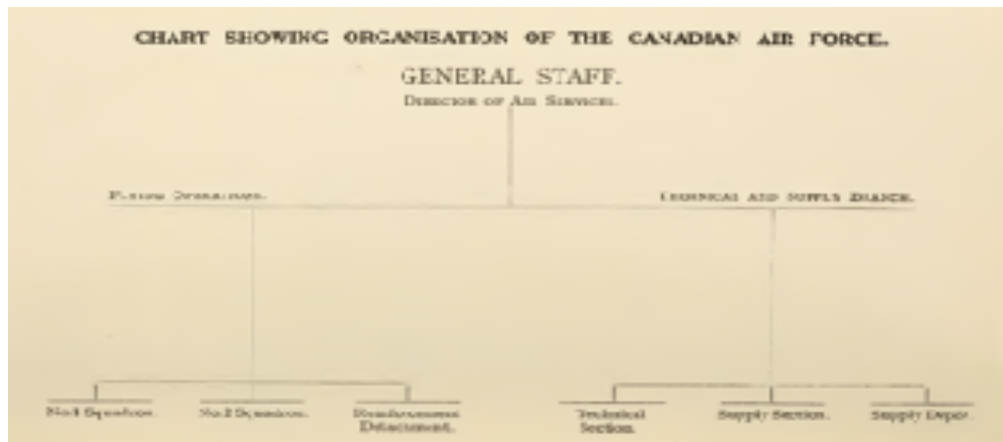
Bureau of Aeronautical Information (now absorbed in Technical and Supply Branch of Canadian Air Force).

In the summer of 1918 a small section was formed known as the Canadian Bureau of Aeronautical Information. It is now absorbed in the Technical and Supply Branch of the Canadian Air Force.

Its object was and is to collect all available technical information regarding the development of aeronautics during the war, both from Allied sources, and where possible from enemy sources.

It was seen that there was a large amount of valuable information on this subject, which could be collected during the progress of the war, but which would not be so easily obtained once peace had been signed and the aerial forces of the allies completely demobilised.

The work done consists of the collection and filing for future reference of drawings, plans, specifications, and all other technical information and data regarding aeroplanes, engines, accessories, and aircraft equipment in general.



This information should be invaluable to Canada after the war, not merely from a military point of view, but for the purpose of the aeronautical development generally, which will, without doubt, become a matter of great importance in the future.

To achieve the objects of the Bureau, it entered into arrangements with the Air Ministry whereby its representatives are allowed free access to the Technical Departments concerned, in order to make known its requirements, and to obtain any documents, publications, drawings, etc., which may be considered of value. In addition, a few officers have been sent on missions to France and Italy, to gather as complete information as possible regarding aeronautics in these countries.

Plans are on foot for the purpose of coming to an arrangement with the Air Ministry under which future aeronautical students from Canada may receive their final training as aeronautical engineers at the leading aeronautical establishments in the United Kingdom.

#### Present Equipment.—

The following equipment has been secured without charge for the Canadian Air Force in the manner indicated.

#### Aeroplanes.

Presented by the Imperial Air Fleet Committee. : 3

Presented by the Overseas Club and Patriotic League . . . . . 16

German aeroplanes in serviceable condition allotted by the Air Ministry . . . . 40

In addition 50 Curtiss machines have been presented to the Canadian Government by the Imperial Munitions Board, giving altogether a total of 109 machines available for the Canadian Air Force when it returns to Canada.

**“The short-lived Canadian Air Force...had been left in limbo by the Armistice.”**

By February 5, 1920, the two CAF squadrons (still cooling their heels overseas) had been disbanded and their personnel sent back to Canada.

5 August 1918 : Order-in-Council (UK or Canada?) establishes the “Royal Naval Air Service Canada”.<sup>108</sup>

15 August 1918 : British aviators brought down 339 German machines, and dropped 320 tons of bombs on enemy batteries and ammunition dumps during the past week.

22 August 1918 : a CAF detachment was formed at the school of Technical Training at Halton, England, to train the required ground crew for two Canadian squadrons (one a fighter squadron and the other a bomber squadron)

27 August 1918 : Ottawa to Dundas air-mail : In order to test the practicality of using aircraft to carry mail, the Post Office Department authorized three experimental Royal Air Force flights between Toronto [Dundas] and Ottawa in August 1918. There was no stamp issued for the first flight.

CLP 1 was mainly used on the second flight.

CLP 2 was issued for the third flight: it was similar to CLP 1,

CLP 2 had a value of 25 (cents) inserted in the bottom corners.

28 August 1918 : RNAS-C Dartmouth begins gearing up for operations six HS-2Ls. (Limited flights - not fully operational)

29 September 1919 : RNAS-C Sydney begins gearing up for operations six HS-2Ls. (Limited flights - not fully operational)

<sup>108</sup> <https://legionmagazine.com/en/2016/02/the-first-air-war-at-sea/#sthash.af5DtQi1.dpuf>

## Notes on "Civil Aviation"

22 August 1918 : CAF detachment RAF formed at the school of Technical Training at Halton, England, to train the required ground crew for the two "Canadian" squadrons. (Fokker D.VII fighters were taken over by the Canadian Air Force in England in 1919. Many were later sent to Canada (Fokker D. VII ser. nos. 8482/18, 8493/18)

Maj A.E. McKeever, CO No. 1 Sqn, CAF, Upper Heyford, UK, 1919 with Fokker D. VII with CAF markings. MIKAN No.339044, Major W.G. Barker, V.C. at Hounslow Aerodrome, UK, April 1919 with Fokker D.VII, MIKAN No. 3214714, Fokker D.VII (ser. no. 8493/18) No 1 & 2 Sqn, CAF, Upper Heyford, UK, 1919, MIKAN No. 3390430  
1919 : Sopwith Dolphin E4764, D5263, in service with the Canadian Air Force, England (MIKAN No.3390997)  
1919 : Sopwith Snipe, No. 1 & 2 Fighting Sqn, Canadian Air Force, Upper Heyford, England, 1919 (MIKAN No.3391011)

After the Armistice was signed in November 1918, Canada claimed 22 Fokker airplanes as trophies of war and for research and display.

Fokker D.VII A1b (Serial No. 6810/18) currently displayed at Brome County Historical Society (BCHS), 130 Lakeside Road.130 Lakeside Road., Knowlton, Quebec.

February 1917 : the first aircraft that the Canadian government retained for historical significance was a 1915 "Nieuport 12" (Nieuport Serial No. N-11504), (A4737) one of only two known to exist worldwide, a gift to Canada from the Government of France transported from France to Halifax by steamship it was exhibited across North America by the War Trophies Board to raise public support for the war effort.

1919 : Raf B.E.2d (Serial No. 5878) of 1915 vintage is sent to Canada as a war trophy.

04 September 1918 : Hoffer Motor Boat Co. (owned by J.B Hoffer) H-2 hydroplane built for the Dept of Lands and Forests crashes into a house, Bute Street, Vancouver, BC

05 September 1918 : A Royal Naval Air Service "in Canada" is approved by the Canadian government. The service is to be formed for home defence. It never sees active service.

1. 64 cadets are selected in September and sent to the Massachusetts Institute of Technology for the ground school instruction <sup>109</sup> that would precede flight training.
2. A dozen more cadets and six RCN ratings were posted to Britain to commence airship training.<sup>110</sup>

19 September 1918 the Canadian Privy Council approved the formation of the CAF in England, comprised of two squadrons and a CAF Directorate of Air Services. This directorate was a branch of the General Staff of the Overseas Military Forces of Canada.

<sup>111</sup>Lieutenant-Colonel William Avery "Billy" Bishop is the first commander of the CAF in England.

5 September 1918 the Royal Canadian Naval Air Service was approved by the Canadian government. Personnel were to be trained on lighter-than-air airships (dirigibles) and heavier-than-air airships (aircraft). By the signing of the armistice, the RCNAS had 81 cadets of whom 60 were under going training in the United States, with 13 in the United Kingdom and eight in Canada awaiting training. Additionally, six coxswains had enlisted for airship duties and were serving in the United Kingdom. (A History of the Air Services in Canada - Don Nicks)

December 1918 : Handley Page has produced 103 "large" aircraft.

5 December 1918 : RCNAS disbanded and all cadets and coxswains demobilized (A History of the Air Services in Canada - Don Nicks)

19 September 1918 : **A distinct "Canadian" branch of the Royal Air Force was authorized (see meeting re winnipeg june 3rd 1920)** . Two British squadrons designated No. 1 (Fighter) Squadron and No. 2 (Day Bomber) Squadron, and posting of Canadians to these units began. - See more at: <https://legionmagazine.com/en/2015/06/canadian-flyers-go-to-war/#sthash.Nujh0vay.dpuf>

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<sup>109</sup> <https://legionmagazine.com/en/2016/02/the-first-air-war-at-sea/#sthash.af5DtQi1.dpuf>

<sup>110</sup> <https://legionmagazine.com/en/2016/02/the-first-air-war-at-sea/#sthash.af5DtQi1.dpuf>

<sup>111</sup> A History of the Air Services in Canada - Don Nicks



## Notes on "Civil Aviation"

28 September 1918 : The Essential Characteristics of Successful and Unsuccessful Aviators with Special Reference to Temperament," by Capt. T. S. Rippon, M.R.C.S., L.R.C.P. (Lond.), R.A.M.C, attached R.A.F, and Lieut. E. G. Manuel, R.A.F, which were published in the Lancet.

October 1918 : High Trenchard appointed commander of the Inter-Allied Independent Air Force in recognition of his close relationship with Americans and the French Air Force.

03 October 1918 : Lancet Scientific report published in FLIGHT : THE TEMPERAMENT OF AVIATORS : " The Essential Characteristics of Successful and Unsuccessful Aviators with special reference to Temperament," by Capt. T. S. Rippon, M.R.C.S., L.R.C.P. (Lond.), R.A.M.C, attached R.A.F, and Lieut. E. G. Manuel, R.A.F.

The enormous number of pilots who have, qualified recently is a proof that the aviator is not a " super-man." It is true that we see certain men who perform marvellous " stunts," but when we come to talk to them and examine them with regard to physique and mentality we find that they are quite ordinary people. Flying is not now confined to the public school boy, the cavalry officer, or the athlete. We take many of our pilots at present from the lower middle classes and some from the artisan class.

Character.—He possesses resolution, initiative, presence of mind, sense of humour, judgment ; is alert, cheerful, optimistic, happy-go-lucky, generally a good fellow, and frequently lacking in imagination.

We found that the best type of pilot was seldom drawn from a sedentary occupation, that those who had lived a sheltered life were not so good as those who had roughed it, and we discovered the interesting fact that most pilots, before they joined, were in business or doing clerical work and possessed considerable sporting aptitude, and as soon as they had finished work would hurry to the cricket or football field.

"The fighting scout" —The fighting scout is usually the enthusiastic youngster, keen on flying, full of what one might call the " joy of life," possessing an average intelligence, but knowing little or nothing of the details of his machine or engine ; he has little or no imagination, no sense of responsibility, keen sense of humour, able to think and act quickly, and endowed to a high degree with the afore-mentioned quality, " hands." He very seldom takes his work seriously, looks upon " Hun-strafting " as a great game.

Mechanical knowledge. —The question whether this type should possess a knowledge of mechanism, and of the whys and wherefores of flying, is a very debatable point.

The authors, however, desire to express their definite conviction that the less the fighting scout pilot knows about his machine from a mechanical point of view the better.

From the very nature of his work he must be prepared to throw the machine about, and at times subject it to such strains that did he realise how near he was to the breaking-point, his nerve would go very quickly.

It has not been possible as yet to obtain a sufficient body of evidence in support of this statement, owing to the unwillingness of pilots to confess their ignorance of engines, for reasons of amour-propre. Some of the most experienced and prominent pilots of the present day, however, uphold our conviction.

The authors have also circulated other questions among pilots with a view to eliciting information on such points as What is the essential characteristic of a good pilot ? &c. On the subject of the physical and psychological aspects of flying they state that the physical condition should always be compared with the temperament of the individual, but the physical examination should always be preceded by the psychological.

November 1918 : air strategy in the 1920s, let us analyse a RAF proposed peace strength chart (Appendix 1), as laid down by the Chief of the Air Staff in a November 1918 paper. Figure 1 below, which is drawn from this Appendix, illustrates the proposed location of the squadrons. Most significantly, the Figure expounds the increasing importance placed by strategists on using air power in the empire, with **34 squadrons placed in colonial possessions**.

The Chief enthused that 'British possessions...are spread over a wide area and aircraft should prove of the greatest service'.

Aircraft were seen as a form of control without occupation, providing a cheap and ubiquitous means of imperial policing.

He (Chief) also opined that 'on the conclusion of peace all available aircraft material should be utilised...in the Dominions and India'.





November 1918 : United States : By the end of the war 300 US factories were manufacturing airplanes and engines. 175,000 workers were employed. Potential output of 21,000 aircraft per year. Between April 1917 and November 1918, US industry delivered 13,844 aircraft and 41,953 engines.

November 1918 : 27 Air Ministry A.I.D Aeroplane Acceptance Parks are in operation for final assembly and acceptance of new aircraft from the factories before delivery to operational squadrons. A number of Aircraft Repair Depots were also built geographically (in UK / France?) to carry out major repairs to enable aircraft return to the Air "Service" (CRS). Air Ministry A.I.D staff is 10,657 persons (not including in-the-field technical officers of the RFC / RNAS "On the Ground").

AID is the only aeronautical department created before the war to have survived it with its identity, organization and senior personnel substantially unchanged. The A.I.D substantially fulfilled its aims to:

1. ensure reliability of British aircraft by development and maintenance of quality standards,
2. foster increased aeronautical production,
3. improve aeronautical equipment.

The British aircraft industry as of the Armistice 1918:

- A. Extremely efficient
- B. Highly developed techniques for manufacture, inspection and repair
- C. Highly Trained and educated personnel (& tiered levels of responsibility)
- D. Excellent research & development facilities
- E. Large capacity for production

November 11, 1918 : WWI Armistice : Hostilities ceased at 11 o'clock. The Royal Air Force at the end of the First World War numbered 30,000 officers and 350,000 other ranks. The first-line strength of the RAF was 3,300 aircraft and 103 airships.

November 1918 : Within days of signing the armistice, the United States cancels \$100,000,000 in contracts for military aircraft and parts, cutting the US aircraft industry to an estimated ten percent of its wartime size. US manufacturing delivered 14,000 aircraft in 1918 (to a low of 263 in 1922). The United States - NACA annual report for 1918 recommends:

- A. Federal legislation to promote and regulate civilian and commercial aviation.
- B. Formation of a committee in conjunction with other government agencies concerned with aviation: the War, Navy, Commerce, and Post Office Departments - the Special Interdepartmental Conference on Aerial Navigation.

The issues:

1. What action should be taken to ensure a healthy aviation industry:
  1. as a commercial enterprise worthy in its own right and
  2. as a reliable source of military aircraft in the event of war?
2. As a means of transportation, how much regulation did flying require to make it:
  1. safe,
  2. attractive,
  3. profitable
3. What organization of government agencies would be most conducive to these ends?
  1. Disagreement on this question is intense, divisive, and bitter.
  2. This question delays passage of civil-aviation legislation for more than seven years.

## Notes on "Civil Aviation"

President Wilson endorsed this recommendation and forwarded it to Congress on 26 February 1918.

April 1919, Dr. Ames reported that:

1. reported that the great public interest in the subject demanded "much study" of it.
2. recommended the appointment of a "strong subcommittee" to make an "extensive study" of the matter. This suggestion won quick endorsement, but it was not until 25 November, after the end of the first session of the 66th Congress, that the Committee got around to appointing the Special Committee on Organization of Governmental Activities in Aeronautics, with Joseph S. Ames as chairman. Thereafter, things moved more quickly. Ames began gathering data and opinions from the United States and abroad. By early December, he had
3. concluded that the European experience clearly demonstrated what not to do:
4. do not form a central department of aeronautics as the British had done in their Air Ministry.

Carrying great weight with Ames was a recent report by Captain H.C. Mustin, a member of the Crowell commission that visited Europe in 1919 to study the aviation lessons of the war.

Ames stated he found "conclusive arguments against combining all aviation work in a central bureau or department" in Capt. Mustin's report. - A scientist, Ames takes umbrage at **the UK's placing of the scientific work under the control of "The Factory"**

This position soon solidified into a tenet of NACA policy - against combining all aviation work in a central bureau or department

(ref : NASA Archive : Ames to Walcott, 11 Dec. 1919, enclosing "Extracts from Report of Captain H.C. Mustin, U.S.N., to the Secretary of the Navy, on the Subject of Aviation Organization in Great Britain, France, and Italy." On Ames's search for information, see, for example, Ames to William Knight, 2 Dec. 1919, in 57 A 415 (66), 51471 19 1920.)

Mustin's evaluation placed emphasis on the question of aeronautical research.

It should be noted that the Crowell commission (of which Mustin was a member) generally endorsed the British model.

Billy Mitchel noted that the USN was trying to duplicate everything - the Crowell commission was in place during the demob post WW1.. they did not truly see all of the work done and the UK AM was already in place - and being cut... the Crowell commission / American Aviation Mission (Flight International has details) returned home in July 1919. The American Aviation Mission recommended that oversight of all aviation activities Military, naval and civilian be concentrated within a single dept of aeronautics - similar to the British. ( see and read : Billy Mitchell's War with the Navy: The Army Air Corps and the Challenge to Seapower - Thomas Wildenberg)

11 November 1918 : Armistice signed ending WW1.

11 November 1918 : Formation of the remaining 6 CAF squadrons UK terminated.

11 November 1918 : Armistice renders RNAS-C redundant

20 November 1918, No. 1 Squadron CAF (fighter) was formed at Upper Heyford, Oxfordshire, England - Sopwith Dolphins / S.E. 5a.

25 November 1918 : No. 2 (day bombing) Squadron CAF formed at Upper Heyford, Oxfordshire, England - deHavilland DH9

27 November 1918 : Canadian Senator George G. Foster of Knowlton, Ontario (George Buchanan Foster, Senator Foster's son was a RFC pilot who survived the war) sends a written request for unspecified "war trophies" to Dominion Archivist Col. A.G. Doughty. A month-long correspondence between the two men followed, and an agreement was made; the Brome County Historical Society would be the recipient of a Fokker D.VII plane if a building suitable for its display and safe keeping could be erected. in the summer of 1921, at which time the promised plane was shipped, in pieces, from Ontario's Camp Borden.

The shipping cost was \$125 and there was some delay in procuring someone qualified to assemble it.

Records indicate that the plane sent to Knowlton was one of 22 planes acquired by Canada as souvenirs of the war.

**McGill University, Acadia University and other educational institutions received the planes as gifts.**

The biplanes were promptly taken apart and studied.

**November 1918 : RAF strength 188 Sqns, 23,000 aircraft with service 291,000 persons (Men and Women)**

**November 1918 : John Armistead Wilson paper "Notes on the Future Development of the Air Service in Canada Along Lines Other Than Those of Defence." See more at: <https://legionmagazine.com/en/2004/09/the-imperial-gift/#sthash.1ZCw3UB7.dpuf>**

## Notes on "Civil Aviation"

- urged the government to embark on a national air policy, involving both regulatory functions and active flying operations.
- stressed that Canada's postwar flying would have to be focused on civil aviation

November 1918 : Major Clare C. MacLaurin report "Memorandum Regarding the Formation of a National Canadian Air Service".

- urged the government to embark on a national air policy, involving both regulatory functions and active flying operations.
- stressed that Canada's postwar flying would have to be focused on civil aviation See more at: <https://legionmagazine.com/en/2004/09/the-imperial-gift/#sthash.1ZCw3UB7.dpuf>

November 1918 - PRINTED BY ORDER OF PARLIAMENT, OTTAWA 1920 : TREATY OF PEACE BETWEEN THE ALLIED AND ASSOCIATED POWERS AND BULGARIA AND PROTOCOL SIGNED AT NEUILLY-SUR-SEINE NOVEMBER 27, 1919 For this Purpose, the HIGH CONTRACTING PARTIES have appointed as their plenipotentiaries : His MAJESTY THE KING OF The United KINGDOM OF GREAT BRITAIN AND IRELAND and OF THE BRITISH DOMINIONS beyond the seas, EMPEROR OF INDIA:

Mr. Cecil HARMSWORTH, M. P., UnderSecretary of State for Foreign Affairs ;

Sir Eyre CROWE, K.C.B, K.C.M.G Minister Plenipotentiary, Assistant Under-Secretary of State .for Foreign Affairs;

and for the DOMINION OF CANADA: The Honourable Sir George Halsey Perley, K.C.M.G., High Commissioner for Canada in the United Kingdom.:

### ARTICLE 91.

Until the complete evacuation of Bulgarian territory by the Allied and Associated troops the aircraft of the Allied and Associated Powers shall enjoy in Bulgaria freedom of passage through the air, freedom of transit and of landing.

### ARTICLE 92.

During the six months following the coming into force of the present Treaty the manufacture, importation and exportation of aircraft, parts of aircraft, engines for aircraft, and parts of engines for aircraft shall be forbidden in all Bulgarian territory.

### ARTICLE 93.

On the coming into force of the present Treaty all military and naval aeronautical material must be delivered by Bulgaria and a\ her expense to the Principal Allied and Associated Powers.

Delivery must be effected at such places as the Governments of the said Power's may select, and must be completed within three months.

In particular, this material will include all items under the following heads which are or have been in use or were designed for warlike purposes :

1. Complete aeroplanes and seaplanes, as well as those being manufactured, repaired or assembled.
2. Dirigibles able to take the air, being manufactured, repaired or assembled.
3. Plant for the manufacture of hydrogen.
4. Dirigible sheds and shelters of every kind for aircraft.
5. Pending their delivery, dirigibles will, at the expense of Bulgaria, be maintained
6. inflated with hydrogen ; the plant for the manufacture of hydrogen, as well as the sheds
7. for dirigibles, may, at the discretion of the said Powers, be left to Bulgaria until the
8. time when the dirigibles are handed over.
9. Engines for aircraft.
10. Nacelles and fuselages.
11. Armament (guns, machine guns, light machine guns, bomb-dropping apparatus,
12. torpedo-dropping apparatus, synchronization apparatus, aiming apparatus).
13. Munitions (cartridges, shells, bombs loaded or unloaded,
14. stocks of explosives or of material for their manufacture).
15. Instruments for use on aircraft.
16. Wireless' apparatus and photographic or cinematograph apparatus for use on aircraft.
17. Component parts of any of the items under the preceding heads.

The material referred to above shall not be removed without special permission from the said Governments.

## Section IV

Inter-Allied Commissions of Control.

## Notes on "Civil Aviation"

### ARTICLE 94.

All military, naval and air clauses contained in the present Treaty for the execution of which a time limit is prescribed shall be executed by Bulgaria under the control of Inter-Allied Commissions appointed for this purpose by the Principal Allied and Associated Powers.

The above-mentioned Commissions will represent the Principal Allied and Associated Powers in dealing with the Bulgarian Government in all matters concerning the execution of the military, naval and air clauses.

They will communicate to the Bulgarian authorities the decisions which the Principal Allied and Associated Powers have reserved the right to take or which the execution of the said clauses may necessitate.

### ARTICLE 100.

It will be the special duty of the Aeronautical Inter-Allied Commission of Control to make an inventory of the aeronautical material which is actually in possession of the Bulgarian Government, to inspect aeroplane, balloon and motor manufactories and factories producing arms, munitions and explosives capable of being used by aircraft, to visit all aerodromes, sheds, landing grounds, parks and depots situated in Bulgarian territory, and to authorise where necessary the removal of material and to take delivery of such material.

The Bulgarian Government must furnish to the Aeronautical Inter-Allied Commission of Control all such information and legislative, administrative or other documents which the Commission may think necessary to ensure the complete execution of the air clauses, and in particular a list of the personnel belonging to all Bulgarian air services and of the existing material, as well as of that in process of manufacture or on order, and a complete list of all establishments working for aviation, of their positions and of all sheds and landing grounds.

December 1918, Canadians were inquiring about availability of airships "to carry mails, government officials and survey unexplored parts of the country, etc." The British Admiralty was prepared to supply six, but observed that such craft had a life expectancy of only six months. By March 1919, Canadian Air Force officers were asking about heavier-than-air machines. Meanwhile, with large stocks of surplus aircraft on hand, Britain's air ministry was cancelling production orders while looking about for ways to dispose of surplus material. The Imperial Gift helped assuage the embarrassment of destroying serviceable aircraft, estimated in the thousands. - See more at: <https://legionmagazine.com/en/2004/09/the-imperial-gift/#sthash.1ZCw3UB7.dpuf>

1918-1919: In England William Avery "Billy" Bishop (DFC-1918) begins ground work on organising a Canadian Air Force. It is noted that bishop had At the termination of a very unsuccessful academic career joined the Mississauga Horse and at the outbreak of the war was a cavalry Lieutenant. in his final two weeks in combat he shot down an incredible twenty-five enemy aircraft, twelve coming in the last three days After this feat, Bishop was posted to a staff job as he was now considered a valuable war symbol. His secondment to the RAF was terminated and he was attached to the Canadian Headquarters Overseas as a temporary Lieutenant-Colonel. won the Commonwealth's highest award for valour, "the Victoria Cross"

**1 October 1918 : Raymond Collishaw (of Nanaimo, British Columbia) who disregarded Military rules, was third overall allied ace - withdrawn from the front, promoted to Lieutenant-Colonel and posted to aid the formation of the CAF**

The survival of military aviation - if it was to survive needed an in.. a "back door" The manner in which the Army leadership exercised command over, and directed aviation policy and professional standards affecting career pilots is examined in the contexts of the contrasting preparations for war of the Army and the Government. the air element has traditionally constituted a very minor proportion of the total personnel - about 10% at the maximum. neither the state's air nor naval forces are represented by appropriately qualified staffs at DOD or the DFHQ. To a certain extent, reflecting this cultural imbalance, the main historical works of recent times have largely ignored air aspects of defence policy and practice.

To a major degree this imbalance in military historiography is a reflection of the cultural imbalance evident in successive Defence Forces handbooks and the manner in which the Air Corps has been presented. Produced and edited by a succession of Army officers these handbooks have generally presented a brief and somewhat simplistic and inaccurate picture of the history and heritage of military aviation. The most recent handbook (1988), in the course of a feature on the training schools of the Defence Forces, makes no reference to the Flying Training School that has been in existence at Baldonnell since 1922. Similarly no reference was made to the Air Corps Apprentice School that was set up in 1936, the fore-runner, by twenty years, of the Army Apprentice School. It is, however, considered that successive generations of Air Corps flying officers have been somewhat remiss in failing to

## Notes on "Civil Aviation"

foster a better historical awareness. Traditionally, flying officers, while progressive and up-to-date in professional and technical matters, have not been aware of or shown any great interest in their aeronautical past and roots. With only a single exception to date the leadership of the corps have, in terms of historiography as in terms of projecting a unique military culture and ethos, remained meekly subservient to the dominant infantry culture of the forces. The resultant subjugation of the history of military aviation requires to be reversed by way of a comprehensive and objective study. it might also be considered that the very deliberate action of Collins, in initiating a relatively small military air arm to conduct intelligence gathering activities, escaped the scrutiny of without detecting his considerable involvement with the early months of the country's civil and military aviation. one must comment on Donai MacCarron's book on Irish military aviation, Wings over Ireland, principally because it is the only substantial one that purports to tell the story of the Air Corps (for the period 19?? to ????) identify the reasons for the lamentable lack of policy and preparation. Neither does the author identify the cultural chasm between the Army and the Air Corps that should have been obvious at the time. the relationship that developed between his artillery corps commanding officer and the British air attach and the resultant cooperation with the RAF. the Royal Engineers are not generally listed in the subject index under 'aviation' and mostly only mentioned in passing in other aviation related entries. (MILITARY AVIATION IN IRELAND 1921- 1945 By MICHAEL O'MALLEY)

A/M = Air Ministry.

AM = Air Ministry.

AM E = Air Ministry Examiner??

**22 Aug 1918** - a Canadian Air Force detachment was formed at the RAF School of Technical Training, Halton, England, to train Canadian mechanics for two proposed "all-Canadian" squadrons in the RAF.

**11 Nov 1918** - Armistice ends the Great War. About 22,000 Canadians had served in the RFC, RNAS and RAF; 1,562 gave their lives, and over 800 were decorated for their services. At the cessation of hostilities large body of trained Air Engineers was available, but there was no peace-time position for them as Civil Aviation had no such positions <sup>112</sup> Canada had no Air Organisation - service or Civil source <https://archive.org/stream/transactionsofen19engi#page/68/mode/2up/search/Air+Engineers> - Engineering journal 1934

December 1918 : Handley Page produces 211 large aircraft

December 1918 : Prime Minister David Lloyd George offered Winston Churchill his choice of appointments as either head of the Admiralty or the War Office. He chose the former, but was given the latter. Lloyd George then told him that he would also be appointed Secretary of State for Air – the political head of the Air Ministry and the RAF .

9 December 1918 : UK - Memorandum by the Chief of the Air Staff Frederick Sykes on Air-Power Requirements of the Empire. Sykes conceptualized the British realm as being held together by a large network of government aviation, with little commercial privatization. In his scheme, the Air Ministry would take up the responsibility of policing operations, postal duties, and an assortment of other public obligations. Additionally, he recommended that home defense consist of twenty squadrons with a cadre of regular commanders; these units would include eight squadrons of day bombers, nine squadrons of night bombers, and three squadrons of flying boats RAF units would be required to discharge coastguard responsibilities, perform all other government aerial obligations, balloon and airship services, as well as undertake surveying, anti-aircraft, and sound-locating duties.<sup>26</sup> He noted that geographical boundaries no longer offered security; therefore, forces should maintain a state of readiness throughout the empire – the Dominions would also be required to maintain squadrons (The Dominions would maintain 37 squadrons – Canada 12, Australia 10, South African 9, and New Zealand 6 ) the meager defense budget could not accommodate Sykes' ambitious plans, and the previous "scheme" (Programme) was never developed by the Air Ministry. This inability to conceptualize the needs of the air service led some within the top echelon of the Ministry to believe that Sykes was unsuitable in his position as CAS, and as a result should be replaced - there is virtually no mention of finance.

The national response to war also led to a national interest in the provision of education.

As the state took more and more control of the levers of industry and services, so it increased its participation in the provision of education.

In 1918, the Fisher Act took educational responsibilities for Secondary Education away from Local Education Authorities and put it directly in the hands of the central government.

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<sup>112</sup> The Engineering Journal pg 56 , February 1936 : <https://archive.org/stream/transactionsofen19engi#page/56/mode/2up/search/Air+Engineers>

## Notes on "Civil Aviation"

It also increased the age of leaving for all students to 14. The British government had been impressed with the calibre of German soldiers who had been taught far more systematically and for longer than the British soldiers had been. It was also felt that the modern battlefield and economy would require better skilled and trained people to man them.

However, despite attempts to take more control over the provision of education, the effects of the Great War would be long lasting and traumatic for many years to come.

Few families in Britain had not been touched by the war.

A generation of teachers would enter their profession scarred by memories of the war, whether directly or indirectly.

Many teachers vow to "veer away from unthinking patriotism" and began to teach a more critical approach to the 'national story'.

Although not a British book, Erich Remarque's '[All Quiet on the Western Front](#)' published in the 1920s gives a nice example of this transition when German soldiers recall the proud patriotic history taught to them by their teacher and compared it to the horrors that they actually faced on the battlefield.

This kind of transition was happening across Europe and also in Britain.

05 December 1918 : RNAS-C disbanded

late 1918 : co-operating with Major Clare C. MacLaurin, John Armistead Wilson begins formulating a postwar aviation policy for Canada.

points to note:

1. Ministers of the Crown were almost as indifferent to aviation in 1919 as they had been in 1913.
2. several groups, including forestry associations, were urging adaptation of aircraft to civil ends, while surveyors and mining officials
3. Other than as a pool of talent and a conduit to British aviation, the shiny CAF in England would be irrelevant.
4. Canada's postwar flying would have to be focused on civil aviation.
5. A national air policy, involving both regulatory functions and active flying operations.
6. domestic air organization would have to be built from scratch, an air force could follow, linked to commercial flying much as the Royal Navy was associated with the Merchant Marine.
7. seaplanes would initially be more useful in the Canadian context than land planes
8. Wilson was assigned the task of writing the Air Board Act.
9. Wilson's vision : A strong civil air industry supporting the RCAF.
10. Key point in Wilson's policy (Air Board) was the institution of airmail (1927) with the post office subsidizing numerous companies through mail contracts. (RCAF cancelled the airmail contracts in 1931-32, a crippling blow to Canadian civil aviation - the air force then began operating a limited airmail service in the lower St. Lawrence Valley.)
11. Wilson completed the first draft of the Air Board Act in two days.
12. Wilson's draft of the Air Board Act was introduced into the House of Commons on April 29, 1919.
13. Wilson's draft of the Air Board Act received royal assent on June 6, 1919.
14. Wilson's Air Board Act
  1. staked out aviation as the exclusive preserve of the national government and not the provinces.
  2. view of aviation as the exclusive preserve of the national government and not the provinces remained unchallenged until 1927.
  3. view of aviation as the exclusive preserve of the national government and not the provinces accepted by the highest courts in 1932.

A. John Armistead Wilson

1. Born in Scotland in 1879,
2. trained as an engineer, (Civil?)
3. moved to Canada in 1905
4. director of stores and contracts for the Department of Naval Service, 1910
5. deputy minister of the Department of Naval Service, 1911
6. had virtually no contact with aviation until the formation of the RCNAs, 1918
7. outlook on aviation was forged from his experience with the Royal Cdn. Navy. "Without a solid civil foundation the navy was never able to muster the material, technological and moral support it needed to prosper; consequently, it remained an artificial construct imposed on a disinterested public, fighting a continual rearguard action for survival." an Canadian air force would lack even the limited political patronage enjoyed by the peacetime Non-Permanent Militia which was populated by weekday politicians masquerading as weekend colonels...
8. Secretary of the Air Board, 1920.

## Notes on "Civil Aviation"

9. Assistant director and secretary of the RCAF, 1923.
  10. view tallied with that of director of the RCAF Group Captain James A. Scott (May 1924 to February 1928) - Scott's objections to continuing RCAF civil operations lay in his belief that they undermined air force training and discipline by encouraging intimate contact between officers, men and civilian employees. believed that the RCAF, stripped of any civil duties, could nevertheless retain its budget and personnel establishment, that the force should be an all-military organization
  11. Controller of civil aviation, 1927.
  12. Controller of civil aviation, 1936
  13. a director of Trans-Canada Airlines, 1937
  14. largely responsible for mobilizing civil aviation as a component of Canada's war effort, 1939
  15. his Department of Transport division was tasked with choosing and developing sites for British Commonwealth Air Training Plan training bases, Dec. 17, 1939
  16. Director of air services, 1941
  17. key figure in organizing Ferry Command
  18. helped plan a Canadian government Trans-Atlantic Air Service, 1942 ( foundation for transoceanic air services by Trans-Canada Airlines)
  19. awarded the Trans-Canada Trophy, 1945.
  20. appointed a Commander, Order of the British Empire (CBE), 1946.
  21. bestowed Cross of Liberation by Norwegian government, 1948.
  22. named to the Canadian Aviation Hall of Fame, 1973
- B. Major Clare C. MacLaurin
- C. The first chairman of the board, Colonel O.M. Biggar, brought to his duties much knowledge of overseas air policies gained while attending the Paris Peace Conference as a Canadian delegate Militia Defence Department - Legal Branch to be constituted - Lieutenant Colonel O. M. Biggar to be Judge Advocate General (at \$6,000/ yr = \$103,587.59/ yr in 2016) replacing Major General Henry Smith - (On 1 October 1911, Colonel (Col) Henry Smith was appointed as Canada's first JAG. Col Smith, who was 75 years old at the time of his appointment, first joined the Militia in 1862. He had served on active service during the Fenian raids and the Northwest Rebellion, and he maintained a law practice in Cobourg, Ontario. The original JAG's mandate included maintaining court martial records, advising courts martial on matters of law and procedure, advising on the revision of the Militia Law and regulations, and providing legal advice to the Militia Department.) authority for appointment of Deputy Judge Advocate General and assistants etc - Minister of Militia and Defence "M. M. and D". 1918 Order-in-Council Number: 1918-0495 Date Introduced: 1918-02-27 Considered Date: 1918-02-27 Approved Date: 1918-02-28 Reference: RG2, Privy Council Office, Series A-1-a, For Order in Council see volume 1190, [Access Code 90](#) Note: See also 1918-0234 Register Number: Series A-1-d, Volume 2814.
- D. In 1920, Col Biggar resigned as JAG to become Canada's elections officer, and was replaced by LCol Reginald Orde. For much of the inter-war period LCol Orde was Canada's only legal officer. Despite the limited resources initially available to him, LCol Orde was responsible for militia, naval and air force law, and providing legal services with respect to discipline, pay and pensions, revising regulations and providing legal advice on general matters pertaining to the Department of National Defence (DND)
- E. 1918 United States average family income \$1,518, 1918 household expenditures \$1,434. source US statistics Bureau. Canadian Dollar worth about 98% of the US dollar - source [www.bankofcanada.ca/wp-content/uploads/2010/07/1914-26.pdf](http://www.bankofcanada.ca/wp-content/uploads/2010/07/1914-26.pdf)
- 1.
  - (source reference : legion magazine article Fathering Civil Aviation: Air Force, Part 8 March 1, 2005 by Hugh A. Halliday)

Lieutenant Colonel O. M. Biggar to be Judge Advocate General

The Judge Advocate General performs two unique statutory roles set out in the National Defence Act (NDA):

1. The Judge Advocate General is the commissioned officer, appointed by the Governor in Council, to superintend the administration of military justice in the Canadian Armed Forces [s. 9.2(1)]. In respect of that superintendence function the late Chief Justice Lamer commented that the intention of the legislative provision "“was to recognize and continue the exercise of responsibilities similar to those of the Attorney General as historically performed by the JAG under English common law”"
2. The Judge Advocate General also performs a separate function as a legal advisor to:
  1. the Governor General in matters relating to military law
  2. the Minister in matters relating to military law
  3. the Department in matters relating to military law, and
  4. the Canadian Armed Forces in matters relating to military law [s. 9.1].



## Notes on "Civil Aviation"

Canadian military law includes the law relating to the constitutionally separate system of military justice as well as the governance, administration and activities of the Canadian Armed Forces.

Military law governs the Canadian armed forces in peace and during armed conflict, at home and abroad.

The breadth of the scope of Canadian military law is reflected in the fact that the Judge Advocate General is a legal advisor to both the Department and the Canadian Armed Forces.

Designation of person to execute Minister's functions

The Governor in Council, on the recommendation of the Minister of Defense, may designate any other person in addition to the Minister of defense to exercise any power or perform any duty or function that is vested in or that may be exercised or performed by the Minister under this Act.

### THE POWER OF DELEGATION - A LONG ACCEPTED PRINCIPLE OF BRITISH PUBLIC LAW

The power of delegation is a long accepted principle of British public law.

"In the administration of government in the United Kingdom the functions which are given to post holders...are functions so multifarious that no post holder could ever attend to them"

It cannot be supposed that this regulation meant that, in each case, the [office holder] in person should direct his mind to the matter.

The duties imposed on [office holders] and the powers given to [office holders] are normally exercised under the authority of the [the office holder] by "responsible officials"

Public business could not be carried on if that were not the case.

Constitutionally, a decision of such an official is, of course, the decision of the [the office holder].

**The [office holder] is responsible.**

1. It is the [office holder] who must answer for anything that his officials have done under his authority, and,
2. if for an important matter the [office holder] selected an official representative of such junior standing that such junior officer could not be expected competently to perform the work, the [office holder] would have to answer .

The legal principle which permits delegation in this way is predicated on the proposition that the [office holder] is responsible for things done under his or her authority.

Therefore, the exercise of the delegation is dependant on two things:

1. the conferment of power must be permitted under legislation; and
2. the existence of a person to whom the [office holder] can delegate, without parting with their ultimate responsibility.

Parliament has conferred powers directly on the [office holder] *because of the personal qualifications of the individual holder* but allows the [office holder] to *delegate those other functions for which qualifications are not required in their position* at the apex of the hierarchical structure put in place to support him or her.

Those delegated functions relying on personal qualifications *can only be delegated to equivalently trained and competent office-holders.*

Whilst *a member of the [office holder] staff may be described in an instrument of delegation as a proper and appropriate agent; that person does not become "the proper and appropriate person"* as their actions under a delegation are those of the [office holder].

**Delegations must be updated with each new post holder.**

Delegated Staff members cannot exercise delegated functions unless the individual has been specifically:



## Notes on "Civil Aviation"

1. *trained to accomplish the specific delegated functions*
2. *authorised in writing* by the relevant [office holder] and
3. *authorised only to the extent indicated* by that instrument of delegation.

I NAME OF Office Holder hereby confirm that

NAME OF the MEMBER OF the OFFICE HOLDER's STAFF

Who, having been:

1. trained to Paragraph X of Schedule X of the **Deregulation and Contracting Out Act, 1994** as an officer and servant of the [office holder], as defined in section XX of the **Deregulation and Contracting Out Act, 1994**
2. examined to Paragraph X of Schedule X of the **Deregulation and Contracting Out Act, 1994** as an officer and servant of the [office holder], as defined in section XX of the **Deregulation and Contracting Out Act, 1994**, and
3. nominated further to Paragraph X of Schedule X of the XXXXXXXX Act of XXXX as an officer and servant of the [office holder], as defined in section XX of the **Deregulation and Contracting Out Act, 1994**

Is authorised by me under the provisions of Section XXX of the **Deregulation and Contracting Out Act 1994** to:

1. act in accordance with the guidelines set out in the Annexe to the Statutory Guidance on Delegations and Multiple Licence Holders in the XXXXXXXX Area up to and including the level of .XXXXXXX, and
2. make decisions in accordance with the guidelines set out in the Annexe to the Statutory Guidance on Delegations and Multiple Licence Holders in the XXXXXXXX Area up to and including the level of .XXXXXXX

Until such time as I withdraw all or any part of the delegation.

Signed \_\_\_\_\_ Date \_\_\_\_\_  
NAME \_\_\_\_\_, Title \_\_\_\_\_  
[office holder] [office holder]

## Appendix ??? : What's Missing: Statutory Guidance on Aeronautical Delegations

### Statutory Guidance on Aeronautical Delegations and AME Licence Holders

I Marc Garneau hereby confirm that

John Q. Public, AME - External Staff

Who, having been:

1. trained to accomplish inspections of aircraft per Aeronautics Act, RSC ABC-123 Canada Paragraph X of Schedule X of the as an officer and servant of the Minister of Transport, Canada , as defined in section XX of the
2. examined to Paragraph X of Schedule X of the \_\_\_\_\_ as an officer and servant of the [Minister of Transport, Canada, as defined in section XX of the \_\_\_\_\_, and
3. nominated further to Paragraph X of Schedule X of the XXXXXXXX Act of XXXX as an officer and servant of the Minister of Transport, Canada, as defined in section XX of the \_\_\_\_\_

Is authorised by me under the provisions of Section XXX of the \_\_\_\_\_ to:

1. act in accordance with the guidelines set out in CAR annex ??? to the **Statutory Guidance on Aeronautical Delegations and AME Licence Holders** in the XXXXXXXX up to and including the level of XXXXXXXX, and
2. make decisions in accordance with the guidelines set out in the Annexe to the Statutory Guidance on Delegations and Multiple Licence Holders in the XXXXXXXX Area up to and including the level of .XXXXXXX

## Notes on "Civil Aviation"

Until such time as I withdraw all or any part of the delegation.

Signed \_\_\_\_\_ Date \_\_\_\_\_  
NAME \_\_\_\_\_, Title \_\_\_\_\_  
[office holder] [office holder]

late 1918 : UK : 27 Aircraft Acceptance Parks "AAPs" are either in operation, or under construction. Aircraft Repair Depots (ARDs) were established (geographically in the UK) to carry out **major repairs** to military aircraft. Good road and rail communication and proximity to industrial centres was essential for the operation of the ARDs.

### APPLYING for AERONAUTICAL APPOINTMENTS - British Air Ministry <sup>113</sup>

The first step to be taken is to write for the necessary form and conditions of entry.

1. It is possible that by the time these lines are in print the Air Force will have come into being.
2. The re-organisation, however, is bound to be slow, so the following notes will still serve.

#### The principal appointments:

##### **1. Commissions in the Royal Flying Corps:**

1. Commissions in the Royal Flying Corps:
  1. Apply to the Director of Air Organisation, Air Board Offices, Strand, W.C. 2.
  2. Applicants for flying officers posts:
    1. must usually be between 18 and 25 years of age, with Class "A" medical certificates.
    2. Officers with military experience are sometimes accepted up to 30 years of age,
    3. Officers with military experience over 30 years of age are occasionally accepted for observers' posts only.
  3. For equipment officers, applicants must be over ?? , with medical classification equivalent to " 1 > 2" on the old scale.

##### **2. Commissions in the Royal Naval Air Service:**

Communicate with the Director of Air Services, Admiralty, S.W.  
Ages required are similar to those for the Royal Flying Corps.

##### **3. Appointment to the Air Board Staff:**

There are a limited number of openings for men whose medical classification is in the "C" category for :

1. engineering,
2. drawing office, and
3. clerical appointments.

Applications for forms should be made to the Secretary, Air Board Offices, Strand, W.C. 2.

##### **4. Appointment to the Aeronautical Supplies Department - Ministry of Munitions:**

The same remarks apply as in the case of the Air Board Staff.

Applications for the needful forms should be made to the Chief Establishment Officer, Air Board Offices, Strand, W.C. 2.

##### **5. Appointment to the Aviation Inspection Department:**

Again the same comments apply, as in the case of the Air Board.

Application Forms are to be obtained from the Director of Inspection, Clements Inn Buildings, Kingsway, W.C. 2.

Note.—In all the above cases, except for flying officers, preference is given to candidates who have had a sound engineering training and experience.

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<sup>113</sup> source ref : UK Aviation pocketbook 1918

**6. Appointment to the Royal Flying Corps:**

Applications for enlistment should be made to the Officer Commanding, Royal Flying Corps Depot, Farnborough.

Skilled mechanics in all trades are taken, whatever their army classification.

Unskilled men are only recruited if classed as B1, B2, C1, or the equivalent.

Non-commissioned officers are promoted from within the ranks.

**Part II. - Establishment of Air Council** <sup>114</sup>

**7. Establishment of the Air Council**

1. For the purpose of the administration of matters relating to the Air Force and to the defence of the realm by air there shall be established an Air Council consisting of:
  1. one of His Majesty's Principal Secretaries of State, who shall be President of the Air Council, and
  2. of other members who shall be appointed in such manner and subject to such provisions as His Majesty may by-Order-in-Council direct.
2. His Majesty may by-Order-in-Council fix the date as on which the Air Council is to be established, and make provision with respect to the proceedings of the Air Council and the manner in which the business of the Council is to be distributed among the members thereof.
3. On the establishment of the Air Council, *the Air Board* constituted under the New Ministries and Secretaries Act, 1916, *shall cease to exist, and all the powers, duties, rights, liabilities, and property of that Board shall be transferred to the Air Council*, but nothing in this subsection shall affect:
  1. any orders issued by the Air Board, ,
  2. any instructions issued by the Air Board, or
  3. other instruments issued by the Air Board, and*all such instruments shall have effect as if issued by the Air Council.*
4. His Majesty may, by-Order-in-Council, transfer from:
  1. the Admiralty, or
  2. from the Army Council, or
  3. from the Secretary of State for the War Department,*to the Air Council or to the President of the Air Council such property, rights, and liabilities of*:
  1. the Admiralty, or
  2. the Army Council, or
  3. the Secretary of State*as may be agreed between the Air Council and the Admiralty or the Army Council, as the case may be.*

8. —

1. *The Air Council may appoint such secretaries, officers, and servants* as the Council may, with the sanction of the Treasury, determine.
2. There shall be paid, out of moneys provided by Parliament, to the members of the Air Council, *and to the secretaries, officers, and servants of the Council*, such salaries or remuneration as the Treasury may determine.

9.

1. *The Air Council may sue and be sued*, and may for all purposes be described by that name.

Section 10, Subsections 2 to 5 deal with official seal and matters of evidence in legal proceedings.

November 1918 : Canada , John A.Wilson produces a paper titled "Notes on the Future Development of the Air Service in Canada Along Lines Other Than Those of Defence". Born in Scotland in 1879, trained as an engineer, and initially employed in India, Wilson moved to Canada in 1905 and worked for the Canada Cement Company. Five years later he became director of stores and contracts for the Department of Naval Service. He was later appointed deputy minister of the department. Wilson had virtually no contact with aviation until the formation of the RCNAS. His engineering background and administrative talents were employed in

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<sup>114</sup> source ref : UK Aviation pocketbook 1918

## Notes on "Civil Aviation"

the construction of seaplane bases at Sydney and Dartmouth in Nova Scotia, manned during the war by United States Navy personnel pending arrival of trained RCNAS staff.

November 1918 : Canada , Major Clare C. MacLaurin produces a report titled "Memorandum Regarding the Formation of a National Canadian Air Service"

MacLaurin and Wilson urge the government to embark on a national air policy, involving both regulatory functions and active flying operations. stressing that Canada's postwar flying would have to be focused on civil aviation. Other than as a pool of talent and a conduit to British aviation, the shiny CAF in England would be irrelevant. At home, a domestic air organization would have to be built from scratch. Once that was established, an air force could follow, linked to commercial flying much as the Royal Navy was associated with the Merchant Marine. Wilson was assigned the task of writing the Air Board Act; he completed the first draft in two days. This legislation was introduced into the House of Commons on April 29, 1919, and received royal assent on June 6, 1919.

The Canadian Air Board was granted wide regulatory powers over aircraft, pilots, mechanics and air bases. (but NOT Air Engineers) It was also empowered to conduct flying operations using government-owned aircraft, and to form a nascent CAF. The first chairman of the Canadian Air Board, Colonel O.M. Biggar, brought to his duties much knowledge of overseas air policies gained as a Canadian delegate the Paris Peace Conference. Colonel O.M. Biggar had even commuted by air between Paris and London. Wilson was appointed as a member of the Air Board - ref : Brace for Impact: Air Crashes and Aviation Safety By Peter Pigott "

November 1918 : SECONDED OFFICERS. The number of Canadian officers attached or seconded to the Imperial Troops or other Forces outside the Overseas Military Forces of Canada was 1,281, at the date of the Armistice. Of these 824 were seconded or attached to the Royal Air Force, of which number, 511 were Flying Officers, 57 were Administrative, Technical or Instructional Officers and 256 were under instruction in aviation. Every facility has been granted to Canadian officers desiring to serve with the Royal Air Force as Flying Officers, but service on ground duties has not been encouraged except in the case of officers specially qualified, or in the case of Flying Officers unfit for further service in the air. <sup>115</sup> - In view of the cessation of hostilities, the War Office has been requested to return all Canadian officers seconded or attached to the Imperial Forces, other than those serving with the Royal Air Force, as soon as their services can be spared,

### OVERSEAS MILITARY FORCES OF CANADA - 1918

1. Minister : THE HONOURABLE SIR EDWARD KEMP, K.C.M.G., M.P.
2. Deputy Minister : COLONEL G. F. HARRINGTON.
3. Assistant Deputy Minister : LIEUT.-COLONEL T. GIBSON, D.S.O.

<sup>115</sup> REPORT of the MINISTRY Overseas Military Forces of Canada, PRINTED BY AUTHORITY OF THE MINISTRY, OVERSEAS MILITARY FORCES OF CANADA.London, UK, 1918

## Notes on "Civil Aviation"

4. Chief of the General Staff : LIEUT.-GENERAL SIR R. E. W. TURNER, V.C., K.C.B., K.C.M.G., D.S.O.
5. Adjutant-General : MAJOR-GENERAL P. E. THACKER, C.B., C.M.G.
6. Quartermaster-General : BRIGADIER-GENERAL D. M. HOGARTH, C.M.G., D.S.O.
7. Accountant-General : COLONEL W. R. WARD, C.B.E.
8. Director-General of Medical Services : MAJOR-GENERAL G. L. FOSTER, C.B.
9. Paymaster-General : BRIGADIER-GENERAL J. G. ROSS, C.M.G.

NOTE <sup>116</sup> : -

1. The **duties of the General Staff** in England under General Turner included control of the training of :
  - a) **Infantry**,
  - b) Artillery,
  - c) Machine-gunners,
  - d) **Engineers** and
  - e) the Medical Corps.
2. The **Adjutant-General's Branch** under Maj.-Gen. Thacker had charge of :
  - a) organization,
  - b) establishments,
  - c) mobilization and demobilization,
  - d) re-inforcements, casualties and invaliding,
  - e) Discipline,
  - f) personnel services and conditions and records,
  - g) care of soldiers ' graves.
3. The Quartermaster's Branch under Brig.-Gen. Hogarth controlled :
  - a) the Army Service Corps,
  - b) the Ordnance,
  - c) the Inspection Department,
  - d) ocean and rail transport,
  - e) Postal Corps,
  - f) Veterinary Corps, and
  - g) Salvage Corps,
  - h) **Engineer Services**,
  - i) War Trophies,
  - j) postage, typing and stationery services.

The number of Canadians <sup>117</sup> who have been in the Royal Flying Corps, the Royal Naval Air Service, and later the Royal Air Force, entered through three main channels :-

1. **Officers who were seconded** to the Air Forces from the Overseas Military Forces of Canada. These officers still remained Canadian officers, although so seconded, and were liable to recall, if necessary, as such they were issued with pay from Canadian funds. Officers seconded or attached to the R.F.C., R.N.A.S., and R.A.F. up to December 31, 1918 were 1,239
2. large numbers of **Non-commissioned officers and men of other ranks** who were discharged from the Overseas Military Forces of Canada for the purpose of entering the Imperial flying services, receiving commissioned rank in that service as soon as they qualified and who were paid by the Imperial Authorities.. The "Other ranks" of the Overseas Military Forces of Canada transferred to the above **from June 1, 1916 to December, 31, 1918** numbered 2,721. *The exact figures of the "other ranks" who transferred to the Air Force prior to June 1, 1916 and subsequently received commissions are not known.*
3. A very large number of **cadets** were **enlisted by the Imperial Authorities in Canada**. At no period were the cadets under the direction of the Canadian Overseas administration, but were in the same position **as if they had enlisted (with H.M Forces) in England** and they were paid by the Imperial Authorities. Cadets enlisted in Canada by the Imperial Authorities and despatched to the above Services numbered 4,280. **At the date of the Armistice there was a large number of cadets in course of training in Canada who, as a consequence of the Armistice, did not go Overseas.**

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<sup>116</sup> THE CANADIAN ANNUAL REVIEW OF PUBLIC AFFAIRS , J. CASTELL HOPKINS, 1918

<sup>117</sup> THE CANADIAN ANNUAL REVIEW OF PUBLIC AFFAIRS , J. CASTELL HOPKINS, 1918 pg 388

## Notes on "Civil Aviation"

Also a certain number of Canadians sailed to England at their own expense and joined the Flying Services, while a certain number who came over to join British Regiments have also subsequently transferred to the Royal Air Force.

There were also a very considerable number of other ranks employed in Canada by the Royal Air Force, and although it is impossible to give exact figures, there have been in the Air Force probably well over 13,000 Canadians of all ranks.

There have also been a number of Canadians who have served in the ranks in the Air Forces in England and France, amounting to approximately 350.

The conditions on which recruiting proceeds are that :-

1. *"every candidate accepted as a Cadet* shall receive :
  1. training at Imperial expense
  2. better than Canadian soldier's pay; and
2. *if a Cadet qualifies for flying work, he receives*
  1. *a commission* as Lieutenant *with*
  2. *special allowances* added to his pay *which make his compensation nearly double that of an officer of similar rank in a Line regiment.*

The conditions of joining the Imperial Air Services were as follows:

1. Age : 18 to 30, men over 25 require "*special qualifications*";
2. **Education : High School for 3 years or a special course ;**
3. Health : absolute medical fitness according to military standards:
4. Pay :
  1. \$1.10 per day during instruction with all necessary accommodation, uniforms, etc., plus 25 cents to 50 cents per day flying-pay and,
  2. when commissioned as 2nd Lieutenant, a total of about \$5.00 per day.
5. Period of service committed to upon joining :
  1. 4 years, but
  2. not longer than the duration of the war.

The subjects for training (initially) included:

1. aerial observation,
2. instruments,
3. wireless,
4. map reading,
5. bombs and bomb dropping,
6. aerial photography,
7. aerial fighting,
8. meteorology,
9. engine construction,
10. aeroplane construction,
11. machine guns.

Canadian costs for Aeroplanes :

Training machines \$7,500 each,

Scout machines (Fighters) \$10,000 each, and

battle-planes (bombers) \$15,000 each.

During 1918 there were 10,000 "aviators" under training in Canadian Camps at :-

1. Borden,
2. Leaside,
3. Armour Heights,
4. Deseronto,
5. Beamsville, and
6. Hamilton

1918 : Maj.-Gen. Charles Hoare is in command of the R.F.C. in Canada and in the United States.

## Notes on "Civil Aviation"

February 1918 : Canadian, Brig.-Gen. A. C. Crichtley, D.S.O., was appointed Commandant of the E.A.F. Cadet School in England. Lieut.-Col. G. C. St. P. de Dombasle was Commandant of the School of Military Aeronautics at Reading ; Major F. V. Woodman of Winnipeg held the Imperial appointment of Commandant at R.A.F. Camp Everman in Texas, U.S. ; Lieut.-Col. A. Hamilton Gault, D.S.O., was Commander of one of the four Divisional Wings of the British Air forces in France ; Lieut.-Col. W. A. Bishop, v.c., was gazetted in September a General Staff Officer in the British Air Service ; Lieut.-Col. H. C. Mayes was appointed Adviser to the Air Ministry on the physical and athletic training of the R.A.F.

Squadron or Wing Commanders corresponded to Battalion and Brigade Commanders in the Infantry.

Sir Herbert Holt was President of the Montreal branch of the Aerial League of the British Empire.  
Lieut.-Col. W. Hamilton Merritt was founder and President the Aero Club of Canada.

of which, did good work in this direction, in helping recruiting, and in the contribution of aeroplanes to the Force.

the Aero Club of Canada. also aimed to promote all forms of aviation, to develop the science of aeronautics, to encourage the manufacture of aeronautic devices, to promote the holding of aviation conferences, to encourage and assist all who wished to take up Aviation in the current War.

In April the Aero Club sent a Deputation to Ottawa, urging the Government to contribute two Squadrons to *a proposed Canadian Wing of 5 Squadrons in the R.A.F.*

Meantime, Colonel Merritt had obtained a charter for the Canadian Aviation Fund and a branch of the Aerial League of the British Empire had been incorporated at Montreal. The Montreal branch of the Aerial League had the distinction of promoting an Aerial mail service between Toronto and Montreal with Capt. Bryan Peck carrying mails between the two cities, 330 miles, in six hours ; on Aug. 15th, at 9 a.m., after correspondence lasting over a year, between Colonel Merritt and the Postal authorities, Lieut. Tsumper Longman left Toronto with a mail-bag, reached Ottawa at 2.50 p.m., returning on the 17th, in a trip lasting from 6.50 a.m., to 12.26 p.m.

A "Deputation" of the branch of the Aerial League of the British Empire waited upon the Government on Dec. 10th, and offered evidence as to the {what} .

It was stated that the United States had been laid out in four great aerial highways, on two of which, aerodromes and landing places were being constructed, and it was claimed that with the existence of machines capable of carrying four tons and traveling aeroplanes capable of carrying twenty tons, the possibilities in a commercial way were great and obvious.

It was declared essential to have aerial routes and safety regulations established.

Hon. N. W. Rowell, for the Government, pointed out that the success of the Canadian Aeroplane industry, and the large amount of spruce supplied from British Columbia for the manufacture of aeroplanes on this continent and in Europe, had made it

necessary to give the subject attention.

Treaties were contemplated in order to regulate Air service between the various Allied nations, and they would be of value in regulating air navigation.

Hon. N. W. Rowell, stated The Government was "heartily in sympathy with the objects of the League".

The attitude of the Government towards Aviation, apart from Sir Sam Hughes' personal viewpoint, in earlier years during the greater part of the War period was based upon its undoubtedly great expense and the natural absence of all expert footing for its

Canadian establishment. The Imperial Government would have been glad to lend this aid but it had its own troubles in Air Force

matters up to 1918 ; there were, also, obvious difficulties in the operation of two such Forces on the Western front.

To withdraw Canadian aviators from the R.A.F. would have been a serious thing to do during most of the months of 1918.

Canadian opinion, however, grew more and more favourable as the months of the last war-year passed and it was understood that the matter would be discussed when the Ministers went to England to take part in the War Cabinet and Conference; it was, also, claimed that Generals Sir R. Turner and Sir Arthur Currie approved the principle of a Canadian Air Force though there was no public expression to that effect.

In May Sir Edward Kemp announced that, after various negotiations, the Imperial Air authorities had agreed to certain conditions; in June these were approved by Mr. Premier Borden and his colleagues then in England; meanwhile, two Canadian squadrons were under organization as a nucleus for the new Force.

## Notes on "Civil Aviation"

On July 8th, 1918, arrangements were concluded between the Canadian Overseas Minister and the Air Minister (Lord Weir) along lines which were later confirmed at Ottawa by Order-in-Council as follows:

(1) That authority be granted for the formation of a Canadian Air Force and of service units of such Force; (2) that further Service

Units be formed from time to time as approved by the Overseas Minister and the Secretary of State for the British Air Force ; (3) that the Canadian Force shall be part of the Overseas Military Forces of Canada and subject to the Militia Act of Canada and be under the same establishment as the R.A.F. ; (4) that the Overseas Minister for Canada be empowered to take such action

from time to time in this respect as he may deem necessary. According to the agreement upon which this was based the squadrons were to be organized in England, in conjunction with the R.A.F., with a type of unit equipment decided by the Air Council ; Canadian officers and other ranks could be transferred to the new Force upon recommendation and release by the Air Council the former to be at once replaced by the Canadian Overseas Forces; the Canadian Government was to assist by provision of

personnel with pay, and allowances, and supply, and reinforcements for Service Squadrons; the Imperial Air Council was to maintain responsibility for command and administration when in a theatre of war or under training in Great Britain. A Canadian

Air Force Section of the Canadian General Staff was created for purposes of organization and a selection of officers made ; the types

decided upon were a single-seated scout squadron and a day-bombing squadron.

08 August 1918 : Ottawa : Hon. A. K. Maclean, Acting Minister of Naval Service, states "the Naval branch of the new Air Service would be under direction of his Department" and called for the enlistment of Cadets with an immediate and large response.

05 September 1918 : Minister of Naval Service Hon. C. C. Ballantyne states "Early in 1918, the Government considered that the formation of an Air Service for coastal defence was of vital and immediate importance to Canada, and, as it was felt that this service should be of a Naval character and should work in conjunction with the R.C.N., the matter was brought strongly before the notice of the British Admiralty. They were in complete agreement, and sent out an Airship officer, Flt.-Com. Barron, in March, 1918, to inquire into the general possibilities." Preliminary organization had been effected with the Director of Canadian Naval

Services, **Admiral Sir Charles Edmund Kingsmill** (helped establish and was the first Director of the Royal Canadian Navy)

08 October 1918 : R.C.A.S. said to have been completely organized with bases chosen and 40 Cadets under training.

08 November 1918 : The R.C.A.S. rates of pay were gazetted as follows :

Flight-Lieutenant from \$4.75 to \$5.50 per day ;

Flight-Commander \$7.00 to \$7.50 ;

Squadron Commander \$8.00

Wing Commander \$10.00;

Technical officers from \$4.00 to \$7.50.

probationary mechanics from \$1.10 to \$1.35

air-craftsmen from \$1.10 up to \$3.75

air-mechanics from \$1.10 up to \$3.75.

In England it was understood that Colonel Bishop acted for some time as organizer and Director of the proposed Canadian Force *and then Colonel Collishaw*,

The following equipment was presented or offered to the Canadian Government in order to facilitate its action and help organization : Donor Aeroplanes

The Imperial Air Fleet Committee 3

The Overseas Club and Patriotic League 16

The Air Ministry (German Machines) 40

The Imperial Munitions Board 50

British Government (Bombing Machines) 50

British Government (Biplanes and Scout Fighters) 42



## Notes on "Civil Aviation"

The Armistice unsettled the Government's policy in this connection and at the close of the year nothing was definitely known as to the future.

The R.A.F. in Canada was being demobilized and the press stated, unofficially, that the Naval Air Service would be discontinued; 10 December 1918 : Hon. Mr. Rowell told a Deputation that "the Government appreciated the importance of Commercial aviation" ; a conference took place at Ottawa

12 December 1918 : Ottawa : Aviation conference, establishes a National Aeronautical Advisory Committee to deal with the situation the uses of aircraft, the utilization of existing personnel and the creation of aerial routes, etc.

28 December 1918 : it is announced (where?) that two great aerial highway routes across the Dominion :-  
St. John's, Nfld., to Victoria, B.C., with shorter ones as follows:

1. Hudson Bay Airway (Winnipeg to Port Nelson, Manitoba)
2. Peace River Airway (Edmonton. Alberta to Dawson City, Yukon Territory ;
3. Dawson Airway (Victoria to Vancouver to Prince Rupert and thence to Dawson, Yukon Territory .
4. Others were under arrangement

Under the War Committee of the Canadian Cabinet Messrs. Rowell, Ballantyne, Doherty, Carvell, Sifton, General Mewburn, Sir G. Foster, Sir E. Kemp, with Sir Robert Borden as Chairman, and Mr. Rowell as Vice-Chairman a considerable work in the co-ordination and development of war activities was carried on during the year. This Committee initiated proposals, planned the details and presented them in a state of workable efficiency to the full Cabinet for consideration; it was the opposite of the British scheme under which the War Cabinet was the real cabinet with full power and responsibility.

17 December 1918 : speech by Hon. N. W. Rowell at Bowmanville, Ontario - he reviewed the war-work and policy of the Union Government at great length and a summary of his statement will be of interest :-

1. Patronage in Government appointments was abolished and the whole "outside Civil Service" <sup>118</sup> is placed under the "Civil Service Commission" <sup>119</sup>.
2. Canadian Federal Government "pledged itself that wealth would be conscripted by taxation of war profits and increased taxation of income. This pledge also has been carried out.
3. The Business War Profits Tax has been continued and broadened so as to include large numbers of industries which were hitherto exempt from its operation.
4. The Income tax has been greatly increased and the taxation of luxuries, jewelry, automobiles, etc. made a special matter.

We have completed the purchase of the Canadian Northern Railway and consolidated all the Government-owned railways under a Board of Directors of business men who will operate the roads in the national interest.

We have placed the operation of the new Government steamships under this Board, so that Canada will own and operate one of the greatest transportation systems in the world. We have declared in favour of the Government ownership and development of the great water powers in the St. Lawrence River, which will mean so much to the industrial life of Canada.

An Act Respecting the Civil Service of Canada (1918). The 1918 Act extended the Civil Service Commission jurisdiction to the Outside Service (across Canada). It gave the Commission the responsibility to organize and classify the entire service. Its staff increased to a high point of 272 in the early 1920s

distinction between the political and non-political officers of government.

Civil Service, the term used to denote the non-political officials of government, whether in the Dominion or the provinces. The officers of government were all appointed by the Crown, or by its provincial representative, and held office "during the pleasure of the Crown".

Though Canada is now a Dominion and one of the group of nations which make up the British Empire, yet we must remember that our Dominion began as a colony, 1stly of France and 2ndly of England.

The Governor-General.—In Great Britain, as we have seen. Parliament is made up of the King, the House of Lords, and the House of Commons. In Canada it is made up of the King, the Senate, and the House of Commons.

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<sup>118</sup> Civil Service in Canada, R. M. Dawson, The civil service of Canada, London, 1929

<sup>119</sup> <http://faculty.marianopolis.edu/c.belanger/quebechistory/encyclopedia/Civilservice-CanadianHistory.htm>

## Notes on "Civil Aviation"

For many reasons it is impossible for the King to take a personal part in the government of Canada, so he is represented by the Governor-General. We should not forget, however, that the King is just as much King of Canada as he is of Great Britain. The title of our present sovereign is "George V, by the Grace of God, of the United Kingdom of Great Britain and Ireland and of the British Dominions beyond the Seas, King, Defender of the Faith, Emperor of India." The Governor-General represents the King and not the British government. "He is the visible link between the United Kingdom and Canada, and his office emphasizes the unity of the Crown within the Empire."

The Governor-General is appointed by the King on the advice of the British government, but, before the appointment is made, the advice of the Canadian government is sought and its approval obtained. He is usually a British statesman or soldier of distinction. He is the constitutional head of the Canadian state, and, as such, must in all Canadian affairs act upon the advice of his Cabinet, that is, his responsible ministers. He takes no part in political struggles and favors neither the government nor the opposition. Like the King, he does not attend meetings of the Cabinet, but all legislation passed in Parliament, as well as all official acts performed by the Cabinet, must receive his assent. He has the power to dismiss his Cabinet, but in such an event he must find other ministers who will be prepared to support his actions before the House of Commons and the people of Canada.

A cabinet minister is placed in charge of each department of the public service and is responsible for the efficient administration of that department. He must attend to the preparation of legislation that concerns his department, must present its financial claims to the House of Commons, and must be prepared to defend his administration before Parliament. If the minister in charge is a member of the Senate, the duty of presenting his estimates is delegated to another minister who has a seat in the House of Commons.

The Minister of Railways and Canals has charge of everything affecting the interests of the railways and canals of the country. His duties are not so important as they formerly were, because all the railways belonging to the government have recently been placed in charge of a president and a board of directors.

The Minister of Marine and Fisheries superintends all matters relating to navigation and the fisheries, such as harbors, lighthouses, safety of navigation, inspection of shipping, fishing regulations, etc.

The Minister of Public Works deals with the erection and management of all public works required for the conduct of business, with the exception of railways and canals.

The Minister of National Defence has charge of the defence of Canada, including the land, naval, and air forces. He supervises military camps and forts, the Royal Military College at Kingston, and the naval barracks at Halifax and Esquimaux.

The Civil Service.—In each of the departments of public service that we have just mentioned, hundreds and sometimes thousands of clerks and other persons are employed. These are called civil servants to distinguish them from the soldiers and sailors, who are military or naval servants of the government.

*Those who live and work in Ottawa, the capital of the Dominion, are called the inside civil service, while those, like customs and excise officers and postal employees, who are scattered throughout the country, are known as the outside civil service.*

## Notes on "Civil Aviation"

*In earlier days men and women were usually given positions in the civil service as a reward for having done something to help their own political party. This system, known as the patronage system, was very bad, because, through it, positions were often given to people who were not able to do the work.*

Further, when one party was defeated and the other came into power, many of those appointed by the old party lost their positions, not on account of inefficiency, but to provide places for supporters of the new government.

*This old system has been largely done away with, and men and women are now, for the most part, given positions and promoted only when they show that they are able to do their work efficiently.*

*The civil service, both inside and outside, is now under the control of the Civil Service Commission, a body independent of politics. Ability and fitness are demanded in every applicant for a position in the civil service. This is a great reform, for the country depends very largely upon the civil service for good government.*

The Civil Service Act, 1882, instituted a Board of Civil Service Examiners, who examined all candidates for admission to the civil service; and these examinations prevented at least the appointment of illiterates, if they did little more

the "inside service" <sup>120</sup>- the departmental officials

the "outside service" <sup>121</sup> - the departmental officials - The Outside Service.—The outside service of the department is carried on by a staff of Inspectors. - These officials are the representatives of the Department in the fields to which they are assigned.

The Privy Council.—The constitution of Canada does not recognize any such body as the Cabinet, but it does recognize and in fact provides for a body known as the Privy Council. Cabinet ministers, as soon as they assume office, are sworn in as members of the Privy Council, and they remain members of that body as long as they live.

The Privy Council, therefore, includes all those men still living who have at any time held cabinet positions. It may also contain men who have never held office under the Crown, but who are sworn in as members of the Privy Council as a recognition of distinguished services rendered to the Dominion.

A recent writer on the Canadian constitution says: "The Privy Council never meets as a body, since it contains the members of former administrations, but the Cabinet is considered to consist of such of the privy councillors (who are members of Parliament) as best and most efficiently represent the views of the dominant political party. It is that part of the Privy Council called the Cabinet which advises the Governor-General."

A command issued by the Privy Council and signed by the Governor-General is called an order-in-council and has all the force of law. Much of the work of government is carried on by means of such orders, which are based upon powers given to the Privy Council by Parliament.

A part of our constitution, the British North America Act, is a law of the Imperial Parliament and can be changed only by Act of that Parliament. Then again, the Governor-General may reserve bills which have passed the Canadian Parliament for the consideration of the British government, if he thinks that they are harmful to the Empire at large or contrary to a British treaty with a foreign country.

Unless the British government approves such bills within two years, they lapse and cannot become law. For the same reasons, the Imperial government may disallow, or set aside, any Act of the Canadian Parliament within two years after it has been passed.

Again, the Judicial Committee of the Privy Council, a court sitting in England, is the final court of appeal in civil cases for Canada, as it is for most of the Empire. This means that in cases where Canadians are not satisfied with the decisions of the Canadian courts, they may appeal to the Judicial Committee of the Privy Council. This court may or may not change the decision already given, but its decision is always final. Moreover, foreign affairs are under the control of Great Britain, and thus it is possible for Canada to be bound by treaties and even to be plunged into war without being consulted.

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<sup>120</sup> STUDIES IN CITIZENSHIP - JAMES McCAIG, M.A., LL.B., THE EDUCATIONAL BOOK CO., LIMITED 1925

<sup>121</sup> STUDIES IN CITIZENSHIP - JAMES McCAIG, M.A., LL.B., THE EDUCATIONAL BOOK CO., LIMITED 1925.

## Notes on "Civil Aviation"

The Lieutenant-Governor.—The representative of the King in a province of Canada is known as the Lieutenant-Governor. He is appointed by the Dominion government and holds office for five years.

The union of the R.F.C. and the R.N.A.S. by the King's command on May. 7th, as the Royal Air Force, aided in the effectiveness of the Service and facilitated recruiting and training.

in the Commons on May 16th 1918 certain information was given:

1. The percentage of accidents to the number of Canadian Cadets named to Mar. 31, 1918 was 3 .69 fatal, 2.50 serious and 3.36 slight,
2. In cases of permanent injury the Imperial Government granted pensions,
3. So far, *about 580 men had come out from England as experts* to aid in the training *including 47 Canadians with experience.*

The Ottawa Journal (June 6th) responded with these facts: "what *the Imperial Government* has so far done is to *offer commissions* to 7,000 young Canadians as "*officers in the British Forces*" (with special extra pay) *who otherwise would have been drafted as privates into the Canadian Army.*

The Toronto Globe and the Star and some other critical organs demanded Canadian control of these Aviation interests in Canada : they did not demand, however, that Canada should pay the expenses of training the men and supplying the machines and building the aerodromes! Nor was anything said about the difficulty of aeroplane timber in British Columbia where labour was short and the Imperial Munitions Board, which had this part of the work in hand, could only get 3,200 men in June, 1918, to supply an almost unlimited British and French demand for Coast timber.

Later on, however, these and other journals did urge the organization of a Canadian Flying Corps. Meanwhile, General Hoare was quietly and steadily at work and on Dec. 7th was able, in thanking P. D. Ross, Chairman of *the Ottawa Aviation Recruiting Committee*, for his services, to state that *2,538 trained pilots had been sent from Canada to the Front, while 552 were in Canada with training completed.*

When demobilization was in progress at the close of 1918 it was found that there were:

- 3,923 Canadian air officers demobilized and
- 1,697 Canadian air officers still on the strength with
- 4,392 Cadets demobilized and
- 373 Cadets on the strength.

The Royal Air Force was entirely under the direction of the Imperial Authorities, yet, in view of the large percentage of Canadians included in its personnel, it was felt by the Minister - Overseas Military Forces of Canada that it was proper that some action should be taken to recognise their Canadian identity, and to ensure that a record of Canadians in the Royal Air Force and of their exploits should be kept.

Accordingly negotiations were entered into (the -subject of discussion between the Minister - Overseas Military Forces of Canada and the Secretary of State for the Royal Air Force in the early part of 1918) with the Secretary of State for the Air as a result of which the following arrangement was come to:—

1. The Royal Air Force agreed to furnish the Minister - Overseas Military Forces of Canada with a Nominal Roll of Canadians in the Royal Air Force, and to advise him from time to time of all accretions to and deductions from it.
2. *All Canadians in the Royal Air Force were to be permitted to wear a Canadian badge either on their shoulder straps or on their sleeve.*
3. It was agreed to give Canadians *representation on the Royal Air Force Headquarters and Staff.*
4. A monthly statement of the exploits of Canadian Airmen was to be furnished to the Minister, with a view to its dissemination to the Canadian public.
5. It was agreed in principle that *Canada should have a Flying Corps of her own*, which, while distinct in its organisation and administration, would form part of the Royal Air Force *for the purpose of operations in the Field.*

This was immediately followed up by further negotiations, and a memorandum setting out tentative arrangements for the organisation of a Canadian Air Force was drawn up between the Minister - Overseas Military Forces of Canada and the Secretary of State for the Royal Air Force, and definitely settled July 8, 1918.

## Notes on "Civil Aviation"

This memorandum was later embodied as part of a British Parliament "Order in Council" which, subsequently, confirmed the agreement.

The provisions of the Order in Council were substantially as follows:—

(a) That *(Imperial Parliament) authority be granted for the formation of a Canadian Air Force and of Service Units of such Air Force in accordance with the terms of the memorandum* (marked "A,") which had been approved by the (Imperial) Secretary of State of the Royal Air Force.

(b) *That further Service Units of said Canadian Air Force be formed from time to time, as and when the same might be approved by the Minister of Overseas Military Forces of Canada and the Secretary of State for the Royal Air Force.*

(c) That *the Canadian Air Force form a part of the Overseas Military Forces of Canada and be subject to the provisions of the Militia Act of Canada.*

(d) *That the Canadian Air Force be under the same establishment as may from time to time obtain in the Royal Air Force.*

(e) That *the Minister of Overseas Military Forces of Canada be empowered from time to time to take any and all action that he might deem necessary for the formation, extension, organisation, and administration of the Canadian Air Force.*

<p style="text-align: center;"><b>PROVISIONS OF THE MEMORANDUM SETTING OUT TENTATIVE ARRANGEMENTS FOR THE ORGANISATION OF A CANADIAN AIR FORCE 1918</b></p>
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The memorandum referred to provided inter alia (among other things) :—

1. That the formation of two (2) Canadian Air Squadrons should be proceeded with forthwith.
2. That these Squadrons should be organised in England by the Overseas Military Forces of Canada in conjunction with the Royal Air Force.
3. That the type of Unit and equipment should be decided by the (Imperial) Air Council.
4. That the personnel of the Squadrons should be drawn as follows:—

(a) Officers :

1. *From officers of the Overseas Military Forces of Canada who are seconded to the Royal Air Force and who were recommended by the Air Council ; and*
2. *from officers of the Royal Air Force who were Canadian citizens and who are available and recommended for release (from the RAF) by the Air Council. Such released officers to be replaced at once by the Overseas Military Forces of Canada.*

(b) Other Ranks :

1. *By the transfer of other ranks of the Royal Air Force who were Canadian citizens and who can be released by the Air Council ; and*
2. *by enlistment of men with suitable qualifications, or*
3. *by transfer from other Canadian Services of men with suitable qualifications.*

5. That *the Canadian Government should assume responsibility for assisting in the formation of the Squadrons by:-*

1. *the provision of necessary personnel, and for*
2. *the provision of pay and allowances of such personnel, as well as for*
3. *the supply and reinforcements for Service Squadrons.*

6. That *the Imperial Air Council should :-*

1. *assume the responsibility for the command and administration of the Canadian personnel when in a theatre of war or under training in Great Britain, and*
2. *assume the responsibility for the provision, maintenance, and*
3. *assume the responsibility for replacing in all cases of machines, tools, technical equipment and supplies necessary to maintain the said Forces ;*
4. *be responsible for the necessary training facilities.*

<p style="text-align: center;"><b>ORGANISATION OF THE CANADIAN "AIR FORCE" 1918</b></p>
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## Notes on "Civil Aviation"

In accordance with the memorandum setting out tentative arrangements for the organisation of a Canadian Air Force, a Canadian "Air Force Section" of the Canadian General Staff ( under Gen. Turner) was created for the purpose of carrying out the organisation of the Squadrons.

Steps were taken to procure the necessary personnel in accordance with the provisions of the memorandum, and a *selection of officers was made, representative of the best traditions of Canadian aerial fighting.*

*The other ranks were selected from Units of the Overseas Military Forces of Canada, special attention in the selection being paid to their civil occupation, so that the men most suited to mechanical work might be' obtained.*

The types of Squadrons decided upon were a single-seater Scout Squadron and a day Bombing Squadron.

These Squadrons were organised in England, and when organised went into quarters at Upper Heyford, near Oxford.

It was intended that these Squadrons should be trained and sent to France to take their place in the field as fighting Units.

To effect this the following **establishment** was authorised:

i. A Director of Air Service (who? ) , who will be the Officer Commanding the Canadian Air Force and will advise the General Staff on matters relating to it. He will have to assist him in his duties:

- A. a Staff Captain, and
- B. a Staff Lieutenant along with
- C. four other ranks.

ii. A Wing Headquarters consisting of:-

- A. a Lieutenant Colonel in command of the two Squadrons ( Lt.-Col. William Avery "Willy" Bishop, RFC / RAF ?) and :-
- B. a Captain for administration,
- C. a Captain for technical duties, and
- D. a Lieutenant for armament along with
- E. 5 other ranks.

who will have to assist the Commander in his duties

iii. No. 1 Squadron (a "Scout" Squadron) consisting of:-

- A. 18 aeroplanes
- B. commanded by a Major (Maj. Raymond Collishaw, RNAS/RAF ?)
- C. three Captains,
- D. (3 ?) Flight Commanders, and
- E. 18 "Flying Officers" of the rank of Lieutenant.
- F. one Administrative Lieutenant and
- G. one Technical Lieutenant
- H. The "other ranks" for this Squadron total 159.

iv. No. 2 Squadron (a "Day Bombing" Squadron) consisting of:

- A. 18 aeroplanes with
- B. one Major Commanding,
- C. three Captains,
- D. Flight Commanders,
- E. 18 Flying Officers
- F. one Administrative Lieutenant and
- G. one Technical Lieutenant
- H. one additional officer
- I. 160 other ranks.

v. A "Technical and Supply Branch" consisting of:

- 1. A Headquarters,
- 2. Technical Branch and
- 3. a Supply Depot.

The work of this Branch is described in part in the Section which follows, the "Bureau of Aeronautical Information" established in the summer of 1918 having been absorbed into this Branch. *the Canadian Bureau of Aeronautical Information was absorbed in the Technical and Supply Branch of the Canadian Air Force upon its creation.*

## Notes on "Civil Aviation"

It was seen that there was *a large amount of valuable information* on this subject, which *could be collected during the progress of the war, but which would not be so easily obtained once peace had been signed and the aerial forces of the allies completely demobilised.* In the summer of 1918 a small section of the *Overseas Military Forces of Canada* (under control of the Militia) was formed known as *the Canadian Bureau of Aeronautical Information* tasked with collecting all available technical information regarding the development of aeronautics during the war, both from Allied sources, and where possible from enemy sources.

The work of the *Bureau of Aeronautical Information* <sup>122</sup> consisting of the collection and filing for future reference :-

- a) drawings,
- b) plans,
- c) specifications, and
- d) all other technical information and data regarding:
  - i. aeroplanes,
  - ii. engines,
  - iii. accessories, and
  - iv. aircraft equipment in general.

This information should be invaluable to Canada after the war, *not merely from a military point of view, but for the purpose of the aeronautical development generally, which will, without doubt, become a matter of great importance in the future.*

To achieve the objects of *the Bureau*, it *entered into arrangements with the Air Ministry whereby its representatives are allowed free access to the Technical Departments concerned, in order to make known its requirements, and to obtain any documents, publications, drawings, etc., which may be considered of value.*

In addition, a few officers of the Bureau of Aeronautical Information have been sent on missions to France and Italy, to gather as complete information as possible regarding aeronautics in these countries.

*Plans are on foot for the purpose of coming to an arrangement, with the Air Ministry, under which future aeronautical students from Canada may receive their final training as aeronautical engineers at the leading aeronautical establishments in the United Kingdom.*

### Training

*Training proceeded along the lines necessary to prepare them for that purpose (as fighting Units), but as a result of the signing of the Armistice they were not required* in France and *their training was then specially directed to fit them for post-war flying, and to giving them instruction in other branches of aeronautics (Aeronautical Engineering) likely to prove beneficial to Canada in the future. Special attention was paid to wireless training, photographic training, aerial geographical training and cross-country flying.* In addition, *steps were taken to complete the organisation of the Canadian Air Force so that, though small, it might provide a fully developed organisation on which might be based any future organisation in Canada.*

### Present Equipment.

The following equipment has been secured *without charge* for the Canadian Air Force in the manner indicated.

Aeroplanes.—

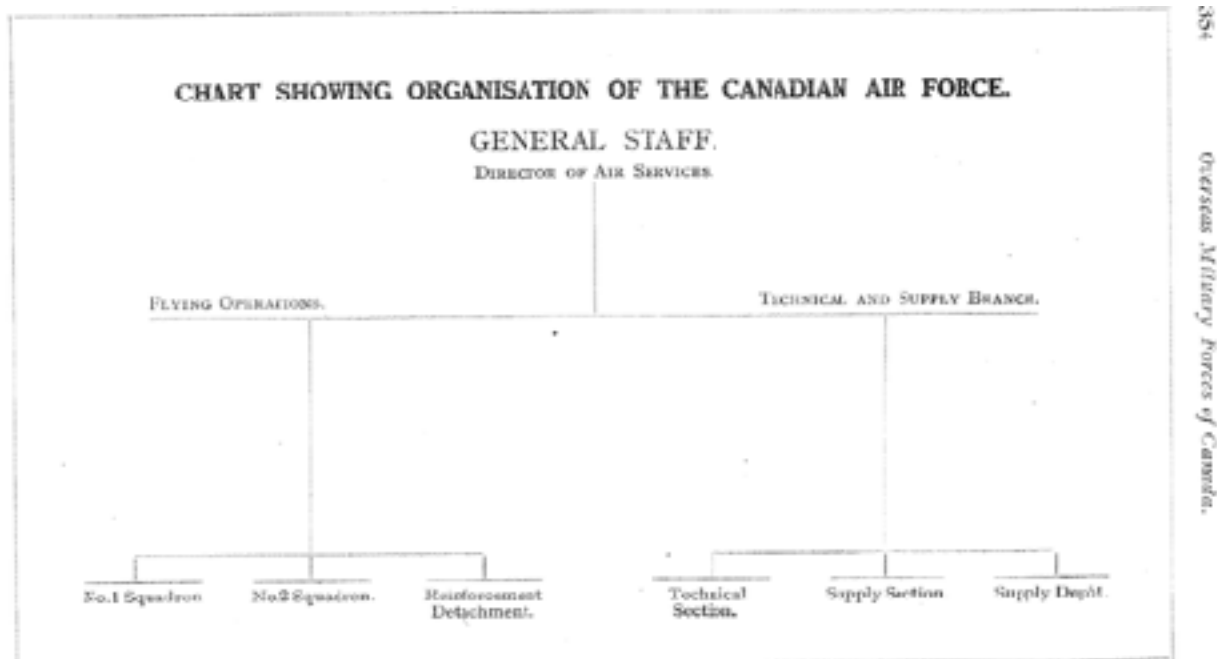
- A. 3 Presented by the Imperial Air Fleet Committee
  - B. 16 Purchased and Presented by the Overseas Club and the Patriotic League
  - C. 40 German aeroplanes in serviceable condition allotted by the Air Ministry
  - D. 50 Curtis machines presented to the Canadian Government by the Imperial Munitions Board.
- giving altogether a total of 109 machines available for *the Canadian Air Force when it returns to Canada.*

### Canadian Air Force.

In 1918 the question of forming a Canadian Air Force, distinct from the Royal Air Force, occupied the attention and received the careful consideration of the Minister.

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<sup>122</sup> THE CANADIAN ANNUAL REVIEW OF PUBLIC AFFAIRS, J. CASTELL HOPKINS, 1918 pg 349



Previous to this year, for various reasons, *it had not been considered in the best interests of Canada or the Empire as a whole to enter on a separate programme in this connection.*

As the war proceeded, and as it became apparent that a Flying Corps would be an essential and important part of any Canadian post-bellum military organisation, as well as likely to have a considerable influence on the development of commercial aeronautics in Canada after the war, *it was resolved to take such steps as were necessary to provide Canada with, at least, a nucleus of such an organisation.*

It was fully realised that *any such Force must of necessity be confined within small dimensions*, because any attempt to withdraw Canadian personnel from the Royal Air Force in large numbers would have had a most prejudicial effect on the efficiency of that Force.

Further, *the expenditure involved in the maintenance of a large Air Force would have been very great.*

30 December 1918 : Aerial achievements by the United States during the war to date:

The "giant seaplane" carried 51 passengers in a test.

One of the greatest scientific achievements from the technical standpoint was the production of non-inflammable helium gas for balloons in large quantities. The pre-war scarcity of helium could be appreciated from the statement that until 1916 not more than 100 cubic feet could be obtained, and the usual selling price was about \$1,700 Per cubic foot.

At the cessation of hostilities the U.S Navy were able to have, compressed on the deck of a vessel ready for use, 147,000 cubic feet of pure helium, and the helium production plants under construction in the U.S. would give at least 50,000 cubic feet daily, at an estimated cost of 10 cents (3d.) per cubic foot.

"the record of the production and development of the Liberty engine conclusively proved the wisdom of the decision to concentrate efforts on this one engine"

More than 19,000 Liberty engines have been produced in the United States. The Liberty engine was an achievement which, for saving, constructive imagination, and farsightedness, would ever be a cause of pride to the American people.



**1919 : MILITARY, NAVAL AND AIR CLAUSES - PARIS PEACE CONFERENCE**

AIR CLAUSES -

Article 198.

1. The armed forces of Germany **must not include** any military [Army] or naval air forces.
2. Germany may, during a period not extending beyond October 1, 1919, maintain a maximum number of one hundred seaplanes or flying boats, which shall be exclusively employed in searching for submarine mines, shall be furnished with the necessary equipment for this purpose, and shall in no case carry arms, munitions or bombs of any nature whatever.
3. In addition to the engines installed in the seaplanes or flying boats above mentioned, one spare engine may be provided for each engine of each of these craft.
4. No dirigible shall be kept.

Article 199.

1. Within two months from the coming into force of the present Treaty, the personnel of the air forces on the rolls of the German land and sea forces shall be demobilised.
2. Up to 01 October 1919, however, Germany may keep and maintain a total number of one thousand men, including officers, for the whole of the cadres and personnel, flying and non-flying, of all formations and establishments.

Article 200.

Until the complete evacuation of German territory by the Allied and Associated troops, the aircraft of the Allied and Associated Powers shall enjoy in Germany freedom of passage through the air, freedom of transit and of landing.

Article 201.

During the six months following the coming into force of the present Treaty, the manufacture and importation of aircraft, parts of aircraft, engines for aircraft, and parts of engines for aircraft, shall be forbidden in all German territory.

Article 202.

1. On the coming into force of the present Treaty, all military and naval aeronautical material, *except the machines mentioned in the second and third paragraphs of Article 198*, must be delivered to the Governments of the Principal Allied and Associated Powers.
2. Delivery must be effected at such places as the said Governments may select, and must be completed within three months.
3. In particular, this material will include all items under the following headings which are or have been in use or were designed for warlike purposes :
  - 1) Complete aeroplanes and seaplanes
    - a) those being manufactured,
    - b) as well as those being repaired or assembled.
  - 2) Dirigibles:
    - a) able to take the air,
    - b) as well as those being manufactured, repaired or assembled.
  - 3) Plants for the manufacture of hydrogen.
  - 4) Dirigible sheds and shelters of every kind for aircraft.
    - a) Pending their delivery, *dirigibles will*, at the expense of Germany, *be maintained inflated with hydrogen* ;
    - b) the plants for the manufacture of hydrogen, as well as the sheds for dirigibles, may, at the discretion of the said Powers, be left to Germany until the time when the dirigibles are handed over.
  - 5) Engines for aircraft
  - 6) Nacelles and fuselages

## Notes on "Civil Aviation"

- 7) Armament (guns, machine guns, light machine guns, bomb-dropping apparatus, torpedo-dropping apparatus, synchronisation apparatus, aiming apparatus)
  - 8) Munitions (cartridges, shells, bombs loaded or unloaded)
  - 9) stocks of explosives or material for their manufacture)
  - 10) Instruments for use on aircraft
  - 11) Wireless apparatus and photographic or cinematograph apparatus for use on aircraft
  - 12) Component parts of any of the items under the preceding heads
- 4) The material referred to above shall not be removed without special permission from the said Governments.

### PART XI - AERIAL NAVIGATION

#### Article 313.

The aircraft of the Allied and Associated Powers shall have full liberty of passage and landing over and in the territory and territorial waters of Germany, and shall enjoy the same privileges as German aircraft, particularly in case of distress by land or sea.

#### Article 314.

The aircraft of the Allied and Associated Powers shall, while in transit to any foreign country whatever, enjoy the right of flying over the territory and territorial waters of Germany without landing, subject always to any regulations which may be made by Germany, and which shall be applicable equally to the aircraft of Germany and to those of the Allied and Associated countries.

#### Article 315.

All aerodromes in Germany open to national public traffic shall be open for the aircraft of the Allied and Associated Powers, and in any such aerodrome such aircraft shall be treated on a footing of equality with German aircraft as regards charges of every description, including charges for landing and accommodation.

#### Article 316.

Subject to the present provisions, the rights of passage, transit and landing, provided for in Articles 313, 314 and 315, are subject to the observance of such regulations as Germany may consider it necessary to enact, but such regulations shall be applied without distinction to German aircraft and to those of the Allied and Associated countries.

#### Article 317.

Certificates of nationality, airworthiness, or competency, and licences, issued or recognised as valid by any of the Allied or Associated Powers, shall be recognised in Germany as valid and as equivalent to the certificates and licences issued by Germany.

#### Article 318.

As regards internal commercial air traffic, the aircraft of the Allied and Associated Powers shall enjoy in Germany most favoured nation treatment.

#### Article 319.

Germany undertakes to enforce the necessary measures to ensure that all German aircraft flying over her territory shall comply with the Rules as to lights and signals, Rules of the Air and Rules for Air Traffic on and in the neighbourhood of aerodromes, which have been laid down in the Convention relative to Aerial Navigation concluded between the Allied and Associated Powers.

#### Article 320.

**The obligations imposed by the preceding provisions shall remain in force until January 1, 1923,** unless before that date Germany shall have been admitted into the League of Nations or shall have been authorised, by consent of the Allied and Associated Powers, to adhere to the Convention relative to Aerial Navigation concluded between those Powers.

1918 : 1918, the 2,600-mile trip from England to Egypt was accomplished. At this stage, also, the Royal Air Force which was a combination of the R.F.C. and R.N.A.S., on April 1st, under one management divided its operations into three groups as follows:  
(1) Reconnaissance machines used for contact patrol work over the lines, the direction of artillery fire, photography, and general strategical work;

(2) heavy bombers capable of travelling long distances without escort, and carrying heavy loads of bombs in addition to defensive armaments;

(3) fast fighting scouts possessing exceptional climbing powers, heavily armed, and capable of manoeuvring at a very high rate of speed.

There were, also, huge battle-planes equipped with cannon and

## Notes on "Civil Aviation"

one, especially, prepared and almost ready to bombard Berlin (to be Piloted by a Canadian) when the Armistice came.

there were seaplanes, flying-boats and hydro-aeroplanes while Wireless was installed and the co-operation of units in Squadrons rendered effective. src ref Canadian Annual report 1918 pg 149-150

Before the close of the War the chief British aeroplanes were working as follows :

Time Speed at required Continuous. Machine. 10,000 ft. to climb flight capacity.  
10,000 ft.

P. E. 2. B 76 40 minutes. 3 1/2 hours.

Vickers' Fighter 76 40 minutes 3 1/2 hours.

Sopwith 1 1/2 Strutter 103 19 minutes.

Bristol Scout , Ill 10 minutes. 1 1/2 hours.

A. W 88 27 minutes. 3 hours.

Sopwith Camel 118 10 minutes. 2 1/2 hours.

D. H. 4 , . 120 11 minutes. 4 hours.

D. H. 9. A 110 11 minutes. 6 hours.

Bristol Fighter 113 11 minutes. 3 hours.

S. E. 5. A 126 10 minute\*. 3 hours.

Dolphin 128 8 1/2 minutes. 1 1/2 hours.

In this development the directing forces had been

Maj.-Gen. E. B. Ashmore, Chief of the London Air Defences, Maj.-

Gen. Sir Hugh Trenchard, the first Chief of the Air Staff, Maj.-

Gen. Sir F. H. Sykes, Lieut.-Gen. Sir David Henderson, Maj.-Gen.

W. S. Brancker. Late in 1917 the Air Forces were merged under

an Air Council with status and powers similar to that of the

Admiralty and its President a member of the Government. Lord

Cowdray was the first Minister and in 1918 the position was held

by Lord Rothermere and then by Lord Weir.

06 July 1918 : The King and Queen Mary, escorted only by three aeroplanes, flew from the Belgian coast to England.

August 1918 : A British aerial dreadnought (Handley-Page) appeared during this month with space for several guns and gunners, a large bomb store-room and a great mass of machinery ; several British universities in this year established Chairs in Aeronautics.

The United States Air Service Board was created on July 24th, 1917, but great difficulties and delays developed in the obtaining of skilled labour, in the getting of material, especially spruce, in the ambition to have a new and unexcelled engine, in obtaining lubricant oils, acetone and linen fabrics. On Jan. 31st, 1918, it was reported to Congress that not a single machine of the exact type planned when Congress appropriated \$640,000,000 in May for an Air fleet would see service in France, but that four types of machines were being manufactured elementary training, advanced training, combatant and bombing. S. G. Blythe in the Saturday Post of Jan. 19th described the situation as follows when it actually came :

" We had no battle-planes. We had

no bombing-planes. We had no high-powered engines. We had

no aeroplanes equipped with the numerous devices war had developed

on the other side. We had 135 aeroplanes, useful for

training and so on, but of no other value whatsoever. the US Senate Military Affairs Committee described conditions

on April 10th as a "disappointing failure" and declared

that the Government had "no broad plan looking to the future

development of war planes." It was stated that only 15 aeroplanes

had been completed and that only one of these was in

France. Dec. 31st, 1917, there were 3,900 officers

and 82,120 men in the U. S. Air Service, that many training

## Notes on "Civil Aviation"

stations were in operation with 24 Flying-fields available, was not satisfying. In the press and in Congress a demand for investigation developed and it appeared that up to February the United States had been purchasing from the Allies such planes as its forces or aviators were using in France totalling from December, 1917, to June, 1918, 2,114 planes. The first American shipment took place in the latter month and, on June 30th, it was semi-officially announced at Washington that 1,316 American aeroplanes were on the Western front, though of these only 323 were combat planes. In July a Senate Committee reviewed and enquired into Aeroplane conditions and the cause of the delays and reported on Aug. 22nd that the original Aircraft appropriation of \$640,000,000 had been "practically wasted" and that not a single American-made offensive aeroplane was yet on the battle-front ; that there had been failure to adopt proved foreign planes and motors, together with unsystematic and ineffective organization; that domination of the Air programme by automobile manufacturers had been allowed while various plans had been partly carried out and then abandoned ; that there had been undue delays in perfecting the Liberty motor, incompetence in the highly-paid inspection service and supervision, and failure to encourage aeroplane producers. The Committee deplored the refusal to use the Rolls-Royce motor or to accept French plans and criticized the various futile efforts of inexperienced men to produce superior types. There were many trails of graft indicated. Late in December the annual Report of the War Secretary included one from Major-Gen. W. L. Kenley, Director of Military Aeronautics, which dealt with the failure in the first year as based upon poor organization and described in general terms the progress made after the 'Aviation Section of the Signal Corps had been reorganized in April, 1918, into the Bureau of Aircraft Production and the Division of Military Aeronautics. John D. Ryan, Director of the Bureau.

The following approximate total of the War expenditures of the Dominions src ref THE CANADIAN ANNUAL REVIEW 1918 pg 210:

Canada \$1,600,000,000  
Australia 1,455,000,000  
New Zealand 377,850,000  
South Africa 115,000,000  
Newfoundland 10,000,000

US General John J. Pershing in his final Report as to the US Army on Nov. 20th, 1918 THE CANADIAN ANNUAL REVIEW 1918 pg 215 "Our entry into the War found us with few of the auxiliaries accessory for its conduct in the modern sense. Among our most important deficiencies in material were Artillery, Aviation, and Tanks. In order to meet our requirements as rapidly as possible, we accepted the offer of the French Government to provide us with the necessary Artillery equipment of 75 's, one fifty-five millimeter howitzers, and one fifty-five G.P.F. guns from their own factories for 30 Divisions. The wisdom of this course is fully demonstrated by the fact that, although we soon began the manufacture of these classes of guns at home, there were no guns of the calibres mentioned manufactured in America on our front at the date the Armistice was signed. The only guns of these types produced at home, thus far received in France, are 109 seventy five millimeter guns.

In Aviation we were in the same situation, and here again the .French Government came to our aid until our own aviation programme should be under way. We obtained from the French the necessary planes for training

## Notes on "Civil Aviation"

our personnel, and they have provided us with a total of 2,676 pursuit, observation, and bombing planes. The first Aeroplanes received from home arrived in May (1918) and, altogether, we have received 1,379. The first American squadron completely equipped by American production including Aeroplanes, crossed the German lines on Aug. 7th, 1918. As to Tanks, we were also compelled to rely upon the French. Here, however, we were less fortunate, for the reason that the French production could barely meet the requirements of their own armies.

The Progress of United States Aviation. No issue received greater public attention in 1917 than American pledges as to Aviation ; no incident caused more disappointment abroad than the failure of expectations in this regard. The War was to be won in the air, it was everywhere said for a time, and American ingenuity, brains and industry would provide the basic elements aircraft and airmen ! There was no question as to the utility of aeroplanes and none as to the necessity. Prior to the American declaration of War there was no preparation along these lines, and S. G. Blythe in the Saturday Post of Jan. 19th described the situation as follows when it actually came :

" We had no battle-planes. We had no bombing-planes. We had no high-powered engines. We had no aeroplanes equipped with the numerous devices war had developed on the other side. We had 135 aeroplanes, useful for training and so on, but of no other value whatsoever. Congress was quick to recognize the importance of this new branch of the Service and promptly passed a law giving broad powers to the Signal Corps and appropriating \$640,000,000 for aircraft, personnel, equipment and the expense of an Air campaign. But we had no idea what to build. We had no standards to go by ; we had no model planes; we had no drawings. We had nothing." Late in December the annual Report of the War Secretary included one from Major-Gen. W. L. Kenley, Director of Military Aeronautics, which dealt with the failure in the first year as based upon poor organization and described in general terms the progress made after the 'Aviation Section of the Signal Corps had been reorganized in April, 1918, into the Bureau of Aircraft Production and the Division of Military Aeronautics. John D. Ryan, Director of the Bureau.

CANADIAN AVIATION - 1919

Interesting point - The United Kingdom may not legislate for a Dominion except by the request and consent of that Dominion.

But the US military did not want an independent National Advisory Council on Aviation (NACA) presence at Langley. In December 1916, the Committee had asked the army for an official designation of property on which it could build its own laboratory buildings, but the army failed to respond. Air Service commanders wanted to maintain control not only over Langley Field but over all experimentation at the field, including that conducted by the NACA. (

January 1919 : U.S Col. Thurman H. Bane, chief of the United States Army Air Service Technical Command, opposes the idea of dual military/civilian control [of aeronautics] so much that he recommends to the army's director of military aeronautics, that all NACA personnel - including civilians - at the NACA facility at Langley Field "be subject to his orders". source ref - ENGINEER IN CHARGE - pg 19

January 1919 : Nineteen twenty-one opens a new year on the calendar, a new epoch in the history of the world and a new hope in the hearts of mankind. In this new era towards which we look forward with confidence, let us resolve that as members of a great profession, we will do all in our power to bring the profession to its rightful exalted position.

May the members of this institute enjoy during this coming year, a period of blessing greater than any in the past, with health, happiness and prosperity in full measure.

January 1919 : THE JOURNAL OF THE ENGINEERING INSTITUTE OF CANADA - Vol. II "Salaries of Engineers"

Correspondence on this subject, published in this and previous issues of The Journal, shows how acute is the feeling respecting remuneration being received by engineers, particularly those employed in the Government service. In many cases salaries received by men doing responsible engineering work have been distressingly low, so much so in some cases, as to be an affront to the profession.

For many years members of our profession, of whom C. E. W. Dodwell, M.E.I.C, of Halifax, is noteworthy, have made earnest efforts to the end that engineers in the Government service should receive recognition as such, and not as clerks, the accomplishment of which would not only give a standing to the engineer in his technical capacity, but would also increase his monetary reward.

A number of years ago a bill was submitted to the then Prime Minister, Sir Wilfred Laurier, by a committee of this organisation, and the promises made at that time led members of The Institute to believe that an Act would be passed placing engineers in the Government employment on a proper basis.

Shortly after, the Government experienced difficulties and went out of power. In 1917 the question was revived and a strong committee of men in the civil service was appointed to go into the subject thoroughly and make recommendations which would raise the standard of the engineer in the civil service.

At that time the hearty co-operation of Council was promised and given. However a change made by the Government in appointing a Civil Service Commission, designed to remove all appointments from the realm of politics, has presented a further opportunity for the engineer to receive recognition. A strong committee of the Council has been appointed, consisting of W. F. Tye, chairman, President H. H. Vaughan and President-elect, Lieut.-Col. R. W. Leonard, to represent The Institute in securing more adequate recognition and remuneration from the Government for engineers.

This committee has made an appointment with the Civil Service Commission, at which time its members will, no doubt, prove to the Commission that the standard of reward for the technical men in the Government service should be raised by a very considerable amount.

## Notes on "Civil Aviation"

In meeting the representatives of The Institute the Commission has shown a willingness to be educated in this connection, and the education they will receive from the committee will work to the advantage of every engineer employed in the Government.

In the reclassification that will take place shortly it is expected that a very substantial increase will be accorded to engineers in the Civil Service

January 11, 1919 : Sir Hugh Trenchard is re-appointed Chief of the Air Staff and Major-General Sir Frederick Sykes is made controller general of civil aviation.

January 14, 1919 : Mr Winston Churchill elevated to Secretary of State for War and Air.

February 12, 1919 " A Department of Civil Aviation was set up with the Air Ministry.

March 22, 1919 : the world's first regularly scheduled international service began operations that linked two cities, Brussels and Paris, under the banner of the Lignes Aériennes Farman

(Lignes Aériennes Farman became the nucleus of Air-France in the nineteen thirties). Flying a mix of Farman Goliaths with Renault power (the F.61) and Gnôme-Rhone-constructed, Jupiter power (in the F.63bis). the Goliath were that it cruised at a solid 70 knots and could reliably achieve 250 miles on every flight. Most flights would not go higher than 10,000 - 12,000 feet, and often lower than that, the Goliath proved on April 3, 1919, that it could carry 14 passengers to an altitude of over 20,000 feet. 60 Goliath's were built [plus four more by Avia in Czechoslovakia under license] Goliaths' were also operated by Cia Aerea Cubana in Cuba and in Colombia.

26 March 1919 : Ottawa : Return to an Order of the Senate dated 26th March. 1919. showing :-

- (1) Whether the Government has divested itself of all aerodromes, airships and air service plant.
- (2) Whether such property is retained by the Government, where it is situated, and of what does it consist.
2. (1) Also, is there any air service organization or personnel in Canada acting under the Government: and
- (2) If there is:
  - (a) of what persons does it consist;
  - (b) what is the qualification and rank of each person ;
  - (c) where are they respectively located;
  - (d) what is each person's duty" (.The Senate.)

April 29. 1919 - src ref sessional papers of Canada 9-10 George 1919 .

*"scrutineer" : a person who observes any process which requires rigorous oversight, either to prevent the occurrence of corruption or genuine mistakes .. Aircraft inspectors would fall under this definition .....*

16 April 1919 : the Canada Gazette - Ottawa Ontario Canada : Canadian Pacific Railway Company notice is hereby given the Canadian Pacific railway company will apply to the Parliament of Canada now in session, four and act authorising you to establish, maintain and operate, services by aircraft between such points and places within or with out the dominion of Canada as may be found desirable and to exercise and enjoys such powers as may be necessary for such purposes as may be necessary for such purposes. Dated at Montréal callback this 16th day of April anno domini 1919. E period Alexander, secretary. Pringle, Thompson, burgess & cote and. Ottawa Ontario Canada, agents. Source reference the Canada Gazette volume 52, number 46, 17 May 1919, page 46 (Page 3568)

17 April 1919 : FLIGHT - EDITORIAL COMMENT Air Terriers A Flight CORRESPONDENT of the Daily Mail advances a most excellent proposal, to the effect that a Territorial Air Force (Air Terriers ) should be constituted.

The correspondent in question, Lieut. F. E. Bussy, late of the R.A.F., points out that there are tens of thousands of highly-skilled and thoroughly efficient flying officers and air mechanics now being demobilised and passing into civil life.

If these men are to be of any use in emergency it is absolutely necessary that they should be kept in practice and familiar with developments in aviation. A flying officer in two or three years will have lost his skill in aerial fighting and bomb-dropping, and he will certainly be unfamiliar with the machines, engines, armaments and instruments which will then be in service. The same applies in equal degree to air mechanics. A month or even a fortnight's training once a year would go very far to enable this valuable material to " keep its hand in " in case of future trouble.

## Notes on "Civil Aviation"

17 April 1919 : FLIGHT : Junior Flight Officers and Cadets

Mr. RAPER asked the Under-Secretary of State for Air whether some thousands of junior flying officers and flight cadets are living at various aerodromes and Royal Air Force stations and doing no work of any useful character; and whether some work can be found for them which will enable these officers and flight cadets to be useful to the Royal Air Force in the future if, and when, a reserve force is formed ?

Maj.-Genl. Seely: About 50 per cent, of the officers and practically all cadets now stationed in the United Kingdom are awaiting demobilisation. My hon. friend may be assured that work of a useful character has been and will be found for those who remain, as far as it is possible to do so.

Technical Officers (Pay)

Sir F. HALL asked the Under-Secretary of State for the Air Ministry whether technical officers are split up into two grades, namely, Category A and Category B ; whether the former receive technical pay and whether the latter do not do so ; whether the duties of those in Category A include compass officers and inspectors of fire services; whether those in Category B include those qualified in armament, chemistry, metallurgy, and photography; if so, whether the duties of those in Category B entitle the officers therein to the same technical pay as those whose duties are to inspect fire services: and whether he will take steps so that both groups of officers are granted the same technical pay ?

Maj.-Genl. Seely: The answers to the first four parts of the question are in the affirmative ; the answer to the fifth part is in the negative. As regards the last part, the whole question of the future emoluments of officers of the Royal Air Force is now under consideration, and an announcement will be made as soon as a decision is reached.

Instructional Flying

Mr. RAPER asked the Under-Secretary of State for Air whether the entire cessation of flying at training stations is due to scarcity of skilled mechanics owing to demobilisation ; and whether flying officers and cadets who have already passed through the technical schools of aeronautics can themselves keep a sufficient number of aeroplanes in flying condition to enable instructional flying to be continued so as to train a number of men for an Air Force Reserve ?

Maj.-Genl. Seely: Scarcity of trained mechanics was one reason for the discontinuance of training, but more weighty reasons were the need for economy and the fact that there are available sufficient trained pilots to meet all probable requirements until the output of pilots commences under arrangements for the Royal Air Force after the War. Flying officers are assisting as necessary in keeping machines in flying condition.

17 April 1919 : FLIGHT : DRAWING OFFICE DATA \*

By E. O. WILLIAMS, B.Sc.Eng. (Lond.), Assoc. M. Inst. Civil Engineers, Assoc. Fellow R.Ae.Soc.G.B.

With the growth of the aviation industry the need for methodisation becomes increasingly important—methodisation in design and

construction as well as in manufacture. With regard to the two first mentioned, as experience is extended the volume grows of data

relating to construction and design, and unless a proper system is evolved for preserving and collating in suitable form such data,

it is almost inevitable that confusion will ensue, or at any rate that full advantage cannot be taken of the experience and data collected in the past for the benefit of the future. Often it will be found that the work involved will be somewhat heavy, especially

as regards design, but it will be found to pay " in the long-run." There is as yet a long way before we arrive at anything approaching

standardisation, hence the number of lengthy calculations involved every time a new design is contemplated is prodigious. So long

as each new machine differs to any considerable extent from the previous one—and at present this would appear to be the case —

all the calculations, aerodynamic as well as structural, have to be gone through afresh. It is not always possible to generalise owing to the difference in shape, size and material of component parts, but much may be done in this direction by making from the start calculations for all such sizes and shapes as may be reasonably expected to come useful for the next series of designs. It is particularly in this anticipation of the next requirements and in the methodical way of presenting them that the series of articles by Mr. E. O. Williams, of which the first is published this week, are useful. The articles do not, except in one or two instances, introduce anything not already pretty generally known, nor do we think that the author lays claim to disclosing any new

discoveries in the bulk of the subjects treated. The articles are, however, the outcome of an attempt to methodise the daily routine



of the drawing office, and, given time, the tabulation of the various calculations would possibly occur to anyone. It is, however, just in this saving of time that these articles will, we feel sure, be found of great assistance. In regard to the tables, graphs, etc., it has not been possible, for reasons connected with publication, to make these all of a uniform size, but so far as has been possible we have endeavoured to do so, so that in the majority of cases readers who wish to do so will be able to tear out these pages and keep them in a loose-leaf pocket-book for easy reference. We regret that since writing this series of articles Mr. Williams has left the aviation industry and has turned his attention to a different branch of engineering. He is now devoting his energies to the restoration of our depleted tonnage—certainly a task of as vital importance as that of building aircraft—but we hope that some day he may be persuaded to return to the aviation world. With these few words of introduction, we will leave our readers to the tender mercies of Mr. Williams.—ED.]

I.—DRAWING OFFICE SYSTEM. (a) System of Numbering Drawings.

THE successful production of complex repetition work, such as the aeroplane, is to a very great extent dependent on the efficiency of the drawing office. Errors in design or draughtsmanship are obviously fatal, but even if the general design is sound, there yet remains a great deal to be done in the drawing office, the quality of which goes a very long way towards making or marring the machine. When, as in pre-War days, only one or two machines of a new type were to be built, the drawings required were, of course, entirely different from those demanded when it comes to orders for large numbers, especially when parts or even complete machines are to be constructed at works other than those of the original designers.

If only one machine were to be built, it would probably be convenient to mass together on one sheet the drawings for all the details referring to a complete unit such as the fuselage. For example, the fuselage drawing would then contain all details such as sizes of longerons, struts, wiring, cockpit, seating, padding, cowling, etc., and all trades would refer to the one sheet of drawings. This procedure becomes impracticable when not one but 1,000 machines are to be built, with a consequent minute division of labour.

The planning of the work is then facilitated if each part has a separate drawing. Also the workman is less liable to get confused if the drawing shows his work only, and he is not required to pick his job out of a multiplicity of other details. This is the basis of the "one part, one drawing" system. Important as is the method of having only one part on one drawing, the systematic numbering of drawings is no less so. The writer has evolved the following system to give effect to the above principles : Each machine is given a distinctive number, and each assembled unit is given an alphabetical letter. For instance : A certain machine has been accepted for reproduction in quantities, and that particular type of machine has been given the

works number 500. Then all sheets, and drawings referring to this particular type will be provided with, firstly, the general number 500, and, secondly, with an alphabetical letter following the number and indicating to what part of the machine the drawing refers. The letter to follow the general number will depend on what system is chosen, and is not, perhaps, so very important so long as the particular system, once decided upon, is rigidly adhered to. The following lettering of drawings will, I think, be found convenient in practice :

General arrangement

complete machine

Fuselage

Wings

Tail plane and elevator

Rudder and fin

Landing gear

Tail skid

Tanks

Engine mountings

and cowling ... j

External wiring ... k

External struts ... /

Controls m

Engine controls ... n

Instrument board ... p

Accessories q

Parts lists r

Stress diagrams

For example, if the general number of the machine is 500, the drawing of the landing gear will be numbered 500/. Detail drawings of the various component parts of the landing gear will then be numbered 500f-i, 500f-2, 500/-3, etc. Another important item as regards convenience and efficiency is the matter of size of drawings. Obviously, it is impossible to have all drawings of one size, irrespective of subject, while it is, of course, equally impracticable to have the different drawings of all sorts of different sizes. It is possible, however, by choosing suitable sizes to reduce the number of sizes to two, one for the general arrangement' drawings and one for detail drawings. The actual size of the drawings is, to a certain extent, a matter of personal opinion, large drawings being preferable in allowing of greater accuracy, while too great drawings become unwieldy to file and handle. In practice it will be found that for general arrangement tracings of machines, a convenient size will be 27 ins. x 50 ins. inside borders, with a f-in. border all around. For detail tracings, a good size is 28 ins. x 36 ins. inside borders, with a f-in. border all around. It will be found convenient to divide up the detail tracings as required to a standard size of 13\ ins. x 9 ins., or multiple thereof, thus dividing up the detail tracing sheet into not more than eight parts. The G.A. tracings should have the full stencil in the bottom right-hand corner, while the detail tracings should have the drawing number and sheet number in the

bottom right-hand corner. All other tracings should have the full stencil in the bottom right-hand corner. Tracers should, of course, be held responsible for their work, and should satisfy themselves that their tracings are accurate copies before handing them in. They should also see that all particulars, such as drawing numbers, etc., are on their tracings. As regards checking of tracings, this should be done by the draughtsman responsible for the drawing traced. (b).—Preparation of Parts Lists, Materials Lists, and Requisition Lists.

It is of vital importance to the speed and economy of a contract that all materials be ordered at the earliest. To omit to order the most trifling detail usually results in serious delay in completing a machine. To avoid this, it is necessary to adopt some systematic listing of parts and materials, and it is suggested that the listing is most conveniently and reliably effected in the drawing office responsible for the original design. (i) Parts Lists.—The first operation is to make a list of every part of the machine on a standard form, such as is shown in Fig. i. This list enables the works office to place out the operations either in the works, or with sub-contractors, in a systematic manner.

(ii) Materials Lists.—From the completed parts lists the Materials Lists are abstracted on to forms such as shown in Fig. 2. This form assists the works office in apportioning the material as it arrives, and also informs each foreman what material he will require.

(iii) Requisition Lists.—The Materials Lists would not be a satisfactory means of communicating requirements to the buying department. Items for similar materials repeat over and over again in the materials lists. For this reason it is necessary to collect in one list, termed the Requisition List, all the requirements of each material required for the contract. For instance, in the Materials Lists 18 gauge plate may occur several times, a few feet here and a few feet there. The object of the Requisition List would be to collect all the requirements of 18 gauge plate in one item, as that is what the buying department would need when ordering.

## II.—STANDARDISED DETAILS.

(a).—Standard Metal Lugs to take A.G.S. Tie-rods and Stream-line Wires.

In the earlier days of the War there was naturally some confusion caused by the absence of any particular specified standards to which to work, the R.A.F. having one standard, the Admiralty another, etc. Now, however, this difficulty has been settled by the universal adoption of what is known as the A.G.S. standard, to which all work executed for the Government has to be made. Under this arrangement standard sizes have been laid down for such details as bolts, nuts, screws, studs, strainers, etc.

In the case of A.G.S. fork ends and universal fork joints, these are so proportioned as to give a certain specified strength, and for maximum efficiency the wiring plates or lugs connecting the fork ends to the spars, struts, etc., should have strengths not less than the specified strengths of the fork joints. Each A.G.S. fork end has a given size of pin. For instance, the 1-in. A.G.S. fork joint has a pin of 1 1/4-in. diameter. The load from the fork joint is transferred to the lug by the bearing pressure of the pin on the metal part of the lug surrounding the pin. The intensity of bearing pressure must not exceed a certain limit fixed by the quality of the material of which the lug is made. For 26-ton mild steel plate, the maximum allowable bearing pressure should not exceed 35 tons per square inch of the projected area of the pin in contact with the plate. Let  $f_b$  be the allowable intensity of bearing pressure in tons per square inch,  $t$  inch (see Fig. 4) be the thickness of the lug,  $d$  be the diameter of the pin, then strength of lug as limited by bearing pressure =  $f_b \times t \times d$  tons. Let  $F$  be specified strength of fork end in tons per square inch, then  $f_b \times t \times d$  should equal or be greater than  $F$ . The diameter of pin,  $d$ , is fixed by the A.G.S. standard design.

\* This article, which was written some time ago, has not been released for publication until recently. It has not, however, lost in interest during the interval.

25 April 1919 : Parliament, Ottawa : CONTROL OF AERONAUTICS-APPOINTMENT OF AIR BOARD <sup>123</sup> - On the motion of Hon. A. K. Maclean Bill No. 80 to authorize the appointment of an Air Board for the control of Aeronautics was read the second time and the House went into Committee on the Bill, Mr. Boivin in the Chair. On section I-Short title:

Henri Sév  rin B  land - Laurier Liberal - Has the minister given a general explanation of this Bill?

Alexander Kenneth Maclean (Minister Without Portfolio) Unionist : I really cannot say anything more than is stated in the Bill which I explained briefly on its first reading. Obviously there must be some development in commercial aeronautics in the immediate future. During the war the development in aeronautics related almost entirely to military and naval affairs. Private and commercial aeronautics was prohibited altogether and consequently there was no development along these lines. It is necessary, in view of the probable development of aeronautics, that there should be some governmental control of such matters and it is proposed to establish a Board which shall have entire control of any Government or commercial service. If my hon. friend will look at section 3 he will see there set forth the duties of the Board which will cover fully, I think, all the probable activities in aeronautics. Section 4 is the other important clause and that empowers the Air Board to establish regulations for the control of aeronautics. Mr. A. K. MACLEAN: It is not proposed to establish another department to administer this Act. I would suppose that most of the members of the Board would be selected from established departments of the Government. The administration of the Act will be largely in the hands of the vice-chairman of the Board who will be the chief executive officer. It is necessary, of course, to have representatives of the Naval and Militia Departments upon the Board for the reason that heretofore they have been very much and practically interested in aeronautics. Consequently it is proposed that they shall have direct representation on the Board. It might be urged that the Post Office Department, the Interior Department, the Dominion Police and some other departments should be represented on the Board. However, there was a reason at the moment existing for the representation of the two departments I have mentioned and it is not deemed advisable that other departments which may possibly be interested in aeronautics in the future should all be represented on the Board. But, it will be understood that this measure is of a temporary

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<sup>123</sup> <http://www.lipad.ca/full/1919/04/25/234/>

## Notes on "Civil Aviation"

nature. I have no doubt that in the working of it during the coming year weaknesses will develop but experience will enable us to pass legislation which will be more satisfactory.

Mr. (MORPHY: I have listened to the statement of the minister and I would judge from it that his intention is to set up a theoretical Board rather than a practical one. Otherwise, he would have stated the fact that we have a large number of the finest Canadians who have ever done service for their country many of whom have returned to Canada after real practical service on the battlefields of Europe. While there may be men who have been employed with the military and naval services in Canada this is a very opportune time of recognizing the boys who have been fighting for their country, and doing good practical work, and of calling to the service of the country some of these young men who fought for it. I will leave that with the minister. I think that there should be some recognition given to these boys who have done their duty overseas.

Alexander Kenneth Maclean : Doubtless *the class to which my hon. friend refers* will be represented on the Board.

Mr. Henry Herbert Stevens : Will the minister kindly state if it is in the mind of the Government that this Board shall at an early date undertake the commercial development of aeronautics, not with the idea that it is to be merely an adjunct of military and naval development but with the idea of taking up definitely the commercial development?

Mr. A. K. MACLEAN: If my hon. friend is inquiring whether the Government intends entering into the field of commercial aeronautics, I am bound to reply that it has not yet considered the matter from that aspect. The operations under the Act will, of course, largely relate to commercial activities; I would expect that for the next few years, at least naval and military activities in aeronautics will be very limited, indeed

Mr. J. H. SINCLAIR: I do not think the minister has given the Committee very much information as to the functions which this board is to perform. I have not got any clear idea as to whether it is simply to manage aeronautics in connection with private enterprise, or whether it is to embark upon some large scheme of its own.

Mr. CAHILL : Has the Government any idea with respect to its future policy on the subject of aeronautics?

Mr. McKENZIE: Is it intended, in connection with the operations of this board, to establish an institution or school where practical and theoretical instruction in aeronautics will be imparted so as to render a man thoroughly competent to take charge of an aeroplane?

Mr. A. K. MACLEAN: Up to the present moment it is not the fixed or settled policy of the Government to establish a school for the purpose indicated. Speaking generally, the Government has no settled policy in respect to aeronautics.

The Militia and Naval Departments, during the period of the war, carried out a programme, but it has now practically ceased. It was necessary to first enact legislation before any fixed policy could be adopted by the Government in respect of any form of aeronautical activity.

Many applications have been received from commercial companies for the establishment of aeronautical routes throughout Canada; and, as I said a moment ago, it is open to the Government to embark upon various forms of aerial activities, such as the conveyance of the mails, the survey of forest, fire protection, patrols by the mounted police, and so forth, but at the present time, the Government has reached no definite policy in respect of any of these matters.

The immediate purpose of this legislation is chiefly to control aeronautics in Canada, established by any Government department or by private corporation. For example, it is not within the right of any individual to fly in the air with aeroplanes or hydroplanes, or any other machine of the kind, although there is no statutory law which directly prohibits it.

Mr. McKENZIE: It is entirely unknown to the common law.

Mr. A. K. MACLEAN: It is unknown to both the common law and the statute law. Consequently, nobody can legally engage in flying to-day, and in none of the provinces, nor in Canada, is there any statutory authority for any body to grant licenses for the purpose. This board must establish aerial routes, or to put it in another way: If a commercial company desires to carry on an aerial service between, say, Montreal and Toronto, their route should be first established and that would be one of the functions of the board. The machines used should be licensed and inspected just as a steamer is. The pilots and the crews must also be licensed, and that will be another function of the board. Furthermore, regulations must be enacted, compelling flying machines to use telephonic or wireless apparatus, and in relation to many other matters which do not occur to my mind at the present moment. I think a very close parallel to the control of aerial navigation is the control which we exercise over shipping, with, of course, the very notable difference that one operates on water and the other in the air. Generally speaking, the object of the legislation is to put

## Notes on "Civil Aviation"

ourselves in a position to control aeronautics, chiefly commercial, as that is the form we shall likely have in the immediate future in Canada.

Mr. EKNEST LAPOINTE: By this Bill, according to the minister, Parliament is establishing its authority over aerial routes and all matters concerning air craft. But does my hon. friend think that if a company, for instance, established a line between Montreal and Quebec, to operate exclusively within the limits of that province, it would be a provincial matter, and that the company in question should not come under the authority of this Parliament unless its undertaking is declared to be for the general advantage of Canada?

My hon. friend classifies aerial navigation with marine navigation, but article 92 of the British North America Act declares that a provincial legislature may exclusively make laws in relation to the matters coming within the class of subjects "hereinafter enumerated," and article 10 of section 92 sets forth: Local works and undertakings other than such as are of the following classes:- Lines of Steam or other Ships, Railways, Canals, Telegraphs and other Works and Undertakings, connecting the Province with any other or others of the Provinces, or extending beyond the limits of the Province.

Therefore if such a company were operating exclusively within the limits of one province it would be a provincial matter, and I do not think this air board could fix the route, or control the license to pilots, and other matters in connection with it.

Mr. A. K. MACLEAN: The constitutional question, of course, arises in connection with this matter, and had it been pointed out to the Fathers of Confederation that we might possibly have this aerial development in later years, it would be difficult now to say whether it would have been placed in clause 91 or 92 of the British North America Act.

Clearly, the legislation, if enacted, would cover interprovincial aeronautics, and consequently to that extent the Federal Government would have control. Whether it has control over purely provincial aeronautics is a question open to very much doubt, and possibly it will have to be settled ultimately by the courts.

There is a clause in the British North America Act which in effect states that subjects not assigned to the provinces fall within Federal jurisdiction.

Aeronautics were not placed in the list of subjects assigned to provincial jurisdiction, and therefore it is arguable that the subject falls within Federal jurisdiction.

However, any doubt we may entertain on the point does not affect the competency of Parliament to pass this legislation, although later it may be held by the courts that it is only *intra vires* in so far as it affects interprovincial aeronautics.

Mr. LEMIEUX: Yes. I think the objection of my hon. friend from Kamouraska (Mr. Lapointe) was well taken. It seems to me that as the Government is so anxious to have Government ownership of all kinds of transportation, it should not lose this favourable opportunity of furthering that project.

There is no incubus attached to aerial as there is to railway transportation, and the Government should take control of this new industry, which no doubt will develop to a very great extent in the near future.

The British Government have already organized an aerial postal service and have mapped out three routes, one for freight, another for passengers, and a third for some public service, I think the postal service.

The United States also have organized a postal service between Philadelphia, Washington and Baltimore.

Mr. LEMIEUX: This may be only a tentative service.

Mr. A. K. MACLEAN: I think it is experimental.

Mr. CAHILL: Will this board be empowered to grant licenses to any persons who wish to establish lines between Ottawa and Toronto, or between other points?

Mr. A. K. MACLEAN: Yes.

Mr. LEMIEUX: Were there any Canadians associated with the American who bought the whole of the aerial property in Toronto?

Major-General MEWBURN: I do not know that there were. Col. Bishop told me that he expected to be interested in some British machines for which he was offered the agency, and while he had not worked out just what he was going to do, he hoped to be able to develop in this country some commercial enterprise, possibly in conjunction with the postal service. ***This Air Board is only a temporary one to study the question***, and the Department of the Naval Service is represented on it merely to keep in touch with a view of developing something in the future.

Mr. LEMIEUX: I would suggest that the minister have Col. Bishop on the first aerial board in Canada.

William Sora Middlebro: I should like very strongly to second the suggestion of the hon. member.

Col. Bishop is a native of my town and is a son of my former legal partner.

I have known him from the day he was born to the present time, and he is to-day the world's champion living airman, having brought down seventy-two aeroplanes.

He is a boy of whom any country might be proud, apart altogether from his ability and record as an airman.

## Notes on "Civil Aviation"

I would respectfully suggest that anything that can be done by the minister to secure his services on this Air Board would be one of the best moves the Minister of Militia could make. I understand *he served for a time on the Administration Board in connection with the air service in London, England, and would be admirably qualified for the position*, though I do not know if he would accept it at the present time.

Major-General MEWBURN: I do not think any salary the Militia Department could offer Col. Bishop would induce him to take such a position. I have had many consultations with him, but at the present time he is making something like \$30,000 a month under contract in the United States.<sup>124</sup>

Mr. COPP: Under subclause (b) of section 3 this Air Board can travel throughout the whole country studying this question, without let or hindrance on the part of any one. They may go even into other countries, as they see fit.

Under subclause (c), they have power to construct and maintain all Government aerodromes and air stations, including all plants, machinery and buildings necessary for their efficient equipment and upkeep.

In these two clauses, the approval of the Governor in Council is apparently not necessary, and I should like to know whether or not it is the intention of the Government to give such wide powers to this Aerial Board.<sup>125</sup>

Mr. A. K. MACLEAN: The purport of subclause (b) of section 3 is merely a direction to the Air Board to take cognizance of and to study aeronautical development in all countries of the world.

It does not imply that the board is to travel as a body to do research work in connection with this matter. It might conceivably at some time be desirable for a member of the board to visit some countries to study the development there taking place, but I do not anticipate that much in the way of travelling will be done by members of the board for a considerable time.

I think, however, it is a very proper provision that members of the board be directed to study the development of aeronautics in all countries in the world.

Section 7 says that all the moneys proposed to be expended under this Bill must be voted by Parliament, so that Parliament will have control over the matter.

The purport of subclause (c) is to place in the hands of the Air Board the absolute control of the construction and operation of any air service owned by the Government.

If the Post Office Department should decide to establish a service between Halifax and Newfoundland, or (Halifax and Charlottetown or Halifax and St. John the control of the service would be in the hands of this Board.

The Board will also control any services which originate in either the Naval Department or the Militia Department, and this clause places in the hands of one body all matters relating to aeronautics. I

trust that this will commend itself to the judgment of my hon. friend. For the time being it seems the best thing to do.

D and E are similar in character to C: it simply gives the Board the control and management of all aircraft and equipment necessary for the conduct of any of His Majesty's services.

Possibly the Government may establish other services of its own, but in any event, such services when once established, and so long as this legislation stands upon the statute books, will be under the control of the Air Board.

Mr. COPP: I quite agree with the minister that such legislation should be passed at this session. Aeronautics are only in the experimental stage and it is but right that opportunities should be given to develop this service if it becomes of commercial value to the country. I would suggest, however, that we surround it with adequate safeguards, particularly in connection with the expenditure of moneys. I fear that if money is expended without the approval of the Governor in Council a very much larger expenditure will be incurred than the Government or this Committee foresees at this moment.

Mr. A. K. MACLEAN: The Governor in Council will exercise a very critical control of expenditures. Clause 7 of the Bill reads: All salaries mentioned herein and all expenses incurred under the provisions of this Act shall be paid out of such money as may be appropriated by Parliament. Therefor the authority of Parliament must therefore be obtained before any money can be expended.

Mr. J. H. SINCLAIR: By this section the Departments of Militia and Naval Affairs are associated with this Board. Which department will it come under?

Mr. A. K. MACLEAN: Both

Mr. J. H. SINCLAIR: What minister will be responsible for the administration of this board?

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<sup>124</sup> <http://www.lipad.ca/full/1919/04/25/236/>

<sup>125</sup> <http://www.lipad.ca/full/1919/04/25/236/>

## Notes on "Civil Aviation"

Major-General MEWBURN: That is not settled. There will be a representative of the Militia Department on the board.

Mr. A. K. MACLEAN: As my hon. friend (Mr. Mowat) in closing, referred to the necessity of legislation at this session, I would like to emphasize the statement a little farther and say -that I am very anxious to have the Bill become law at once and that I shall probably ask His Excellency's assent to this Bill long before the closing of Parliament. I do not desire to amend the Bill with a view of abrogating any of the common law doctrines in respect to property rights in the air. In view of recent developments, the point is one for the courts to determine but I doubt very much if that doctrine would be held to have much validity under the circumstances. I would refer my hon. friend to paragraph (i) of section 4 which reads as follows: (i) the institution -and enforcement of such laws, rules and regulations as may be deemed necessary for the safe and proper navigation of aircraft in Canada or within the limits of the territorial waters of Canada; The subsection 3 immediately below reads as follows: (3) All regulations enacted under the provisions of this Act shall be published in the Canada Gazette, and, upon being so published, shall have the same force in law as if they formed part of this Act. The important thing to have in mind in aerial navigation is the protection of life and property, and I have no doubt the board will provide by regulation that no flying machine shall approach the ground, or approach a building, within a certain number of feet. I have heard the story frequently, and I assume it is a fact, of somebody when flying in the city of Vancouver entering a bedroom where a patient was being attended by a -doctor; the machine and pilot landing in the bedroom. We will seek to avoid the repetition of such a discourteous act as that by providing a regulation that -the flight of -the airplane shall be of a certain height in order to safeguard, so far as is possible, the safety of property and person. I submitted the Bill to the Justice Department before introducing it, and was told that the measure was perfectly constitutional and about the best that could be done to meet the situation for the time being.

Mr. McKENZIE: I think it is only fair when we are dealing with so practical a phase of the development of aeronautics as the present, that I should suggest to the minister that he would-in connection with this board and in connection with any legislation on this subject-enlist the sympathy and help of the father of aeronautics in this country, I refer to Dr. Bell, who has a home at Baddeck, N.S., although he sometimes resides in Washington. I had the pleasure in September 1896 of being present in the machine shop experimenting office of Dr. Bell in the town of Baddeck, when it was considered a great achievement in aeronautics that he could cause a certain machine that he had in his laboratory to rise three or four inches from the ground.

It is gratifying to know that we have today reached such an advanced stage of development in aeronautical science. Dr. Bell is a Canadian, born in Brantford in the great province of Ontario and is well known, and he spends about ninety per cent of his time at his beautiful home in the neighbourhood of Baddeck in the county which I have the honour to represent, and I think it would be only fair on the part of the Government to recognize his great services, the great research he has displayed, and what he has done for this science. The first airship that was ever built in Canada was constructed at his workshops at Baddeck, and did considerable flying. It was operated by a Baddeck boy, young McCurdy, who was famous afterwards as a flier and who was in charge of some of the works at Toronto or Camp Borden in the early stages of the war. I do not know where young McCurdy is now.

Major-General MEWBURN: Long Branch.

[Section 4-powers of Air Board to make regulations *with approval of Governor in Council* - agreed.

Section 5 provides that the board shall have *power to control the places in Canada* where a landing may be made from a foreign country.]

A. K. MACLEAN: The purpose of this clause is to provide for the control and discipline of those employed in connection with the Government service. For instance, if it was an air service in connection with national defence, the Air Board would acquire these powers, which are somewhat similar to the powers enjoyed by the Naval Department and the Militia Department. If the service had something to do with policing the un-organized territories of Canada, it would probably be necessary to house and clothe our men. The powers are very general, but important and necessary.

08 May 1919 : FLIGHT : Civil Aeronautics in Canada : THE Bill providing, for the control and encouragement of flying in all its aspects, the issue of licences, inspection of machines', and arrangement of air routes has reached its third reading in the Canadian Parliament. It is proposed to make the control of commercial flying a public monopoly

19 May 1919 : at the government house at Ottawa : presents his Excellency the Governor General in council. His Excellency the Governor General in council, on the recommendation of the minister of the naval service, is pleased to order and it is hereby ordered that the falling addition and alteration are hereby made to P.C. 269 of 8 February of 1919, viz:- In all cases where the letters "RCN" and "RNCVR" appear, the letters "RCNAS" (i.e. Royal Canadian Naval Air Service) are hereby inserted immediately after the letters RCN. [...] Rudolphe Boudreau - Clerk of the Privy Council. source ref Canada Gazette volume 52, number 48, 31 May 1919, page 12 - 1919 pg 3688 - 3689.



## Notes on "Civil Aviation"

27 May 1919 : Minutes of a Meeting of the War Cabinet, held in Mr. Bonar Law's Room, House of Commons, London, UK<sup>126</sup>

The Imperial British War Cabinet had before them a memorandum by the Under - Secretary of State for Air ( Paper G.T. - 7332) regarding the proposed transfer of aeroplanes by the Royal Air Force to Dominion Governments.

The memorandum stated that the Air Council had had before them a request *from the Canadian Air Force* [in Britain] for the presentation to that Force of ninety-two aeroplanes and engines *to assist the Canadian Government in starting a permanent Air Force.* <sup>127</sup>

The UK Air Council thought this request *should be considered as part of the general question* of whether, and if so, under what conditions, *the Governments of the Dominions should be assisting in initiating independent military Air Forces,* <sup>128</sup> a similar question having been raised on behalf of South Africa.

The British fully expected the gift to be used in "jump starting" air forces throughout the Empire, and the initial types offered were limited to:

de Havilland 9 and 9A,

Bristol Fighter,

SE.5,

Salamander,

Dolphin, and

Avro 504s. <sup>129</sup>

The lists of "available machines" changed frequently, while the recipients dickered over the selection. <sup>130</sup>

At times there seemed to be "no plan to Dominion requests", as when the Canadians suggested a single Handley-Page O/400 and a "Super Handley-Page" (presumably a giant V/1500).<sup>131</sup>

The view of the Air Council <sup>132</sup> was that:

1. "a free gift of a certain number of machines should be made".
2. In this way the pressure on storage space on account of the number of machines which there was no prospect of selling until they had become practically useless would be alleviated to some extent, and
3. this course was recommended by the fact that, in the view of the Disposal Board, when every demand which could reasonably be foreseen was met, there would still remain a considerable surplus of machines of certain types which would not have a higher value than scrap value because they had become obsolete or deteriorated through storage.

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<sup>126</sup> Minutes of a Meeting of the War Cabinet, held in Mr. Bonar Law's Room, House of Commons, on Tuesday, 27 May 1919, at 6pm - WAR CABINET PAPERS - memorandum by the Under - Secretary of State for Air regarding the proposed transfer of aeroplanes by the Royal Air Force to Dominion Governments Paper G.T. - 7332. This Document was the Property of His Britannic Majesty s Government - classified as SECRET until 1970

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<sup>129</sup> <https://legionmagazine.com/en/2004/09/the-imperial-gift/#sthash.1ZCw3UB7.dpuf>.

<sup>130</sup> <https://legionmagazine.com/en/2004/09/the-imperial-gift/#sthash.1ZCw3UB7.dpuf>.

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## Notes on "Civil Aviation"

The Under - Secretary of State for Air said <sup>133</sup>:

1. that he proposed, with the approval of the War Cabinet,
  1. that when the Air Council had in stock 500 or more machines of any one type surplus to active and reserve requirements of the Royal Air Force, or
  2. that when the Air Council had in stock 500 engines of any one type surplus to active and reserve requirements of the Royal Air Force,that power should be given to put a number not exceeding 100 "at the disposal of a Dominion", free of cost.

The First Lord of the Admiralty said that:

1. the Admiralty were asked to give ships to the Dominions, and
2. the Admiralty proposed to do so on the same principle so long as the loss to the United Kingdom would not exceed a reasonable sum.

The Secretary of State for India thought:

1. that if the Cabinet agreed to the Under-Secretary of State for Air's proposal, India should be included with the Dominions.
2. that if the Dominions were given free gifts of aeroplanes, India should not be expected to pay for hers.

Mr. Bonar Law said:

1. that he saw no objection to General Seely's proposal.
2. He thought, however, the fact that we were making a gift of aeroplanes to the Dominions and India should be made widely known to the public.

The Under-Secretary of State for the Colonies said:

THAT A NUMBER OF COLONIAL GOVERNMENTS AND PROTECTORATES WOULD BE GLAD OF THE GIFT OF A FEW MACHINES.

The War Cabinet decided <sup>134</sup>:

1. to approve of the Under-Secretary of State for Air's proposal that "a gift of aeroplanes not exceeding 100 should be made to each Dominion and India", and
2. that a gift of a few machines should be made to any colonial Government or protectorate requiring them.
3. These machines would be in addition to those to be returned to the Dominions free of cost to replace the machines given by the Dominions during the war.
4. That the Under-Secretary of State for Air should arrange for adequate publicity to be given this action by His Majesty's Government.

this 100 aircraft gift was soon exceeded, and more than 100 aircraft were sometimes sent.

03 May 1919 : FLIGHT The Accident to Gen. Sykes : AN aeroplane taking Maj.-Gen. Sir F. H. Sykes, Controller-General of Civil Aviation, to Paris, met with an accident on the afternoon of May 3, at Kenley. The pilot, Capt. E. M. Knott, A.F.C., was killed. Maj.-Gen. Sir F. H. Sykes was badly shaken, but was able to motor to London. He was removed in the evening to a private nursing home, and is making good progress. The accident happened at a height of about 50 ft., soon after the machine had begun to leave the ground. Gen. Sykes scrambled out of the machine, and extricated Capt. Knott, but the latter was so severely injured that he died on his way to the hospital.

Forest Protection in Canada : MR. STUART GRAHAM, who was a naval air pilot in the R.A.F., has arrived at Ottawa to take charge of two planes released by the Canadian Department of Naval Affairs for forest protection in Quebec

08 May 1919 : FLIGHT : RAF Capt. J. Alcock, D.S.C., who received his technical engineering education at the Empress Motor Works, at Manchester. He took the Royal Aero Club's Flying Certificate at Brooklands in 1912, and rapidly rose to the head of his profession, taking part in a large number of the early competition flights, amongst others the well-remembered race London to

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<sup>133</sup> Minutes of a Meeting of the War Cabinet, held in Mr. Bonar Law's Room, House of Commons, on Tuesday, 27 May 1919, at 6pm - WAR CABINET PAPERS - memorandum by the Under - Secretary of State for Air regarding the proposed transfer of aeroplanes by the Royal Air Force to Dominion Governments Paper G.T. - 7332. This Document was the Property of His Britannic Majesty's Government - classified as SECRET until 1970

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## Notes on "Civil Aviation"

Manchester and return in 1913, in which he secured second place. At the outbreak of War he immediately joined the R.N.A.S., and was posted to Eastchurch as an instructor. Later he became the Chief Instructor of the Aerobatic Squadron. He did valuable work on the Turkish front, where he won the D.S.C., and held the record for long-distance bombing raids. He was eventually taken prisoner by the Turks owing to an engine failure, and remained as such until the end of the War

and RAF navigator, Lieut. Arthur Whitten Brown, A.M.I.E.E. M.I.M.E., A.M.F A.I.E 1886, an engineer by profession who received his practical training with the British Westinghouse Co., [now allied with the Vickers Co.] Royal Flying Corps observer wounded and taken prisoner of war in 1915, repatriated in December 1917, since which time he has been engaged with the Ministry of Munitions on the production of aero engines, and has put in a considerable amount of flying at home stations. He is also a pilot of some experience, and has flown many types of machines.

MAY 8, 1919

FLIGHT



THE VICKERS "VIMY-KOLLS."—Three-quarter front view. The machine will be piloted by Capt. J. Alcock, D.S.C., and the navigator will be Lieut. A. W. Brown, whose article on elementary navigation was published in "Flight" recently

08 May 1919 : FLIGHT : THE Air Ministry makes the following announcement :•—

### 1. Air Navigation Regulations

- The official Air Navigation Regulations (printed below) apply to the United Kingdom only.
- They do not permit of civil aircraft flying from England across the Channel to any foreign country, and are not applicable elsewhere than in the United Kingdom.
- Overseas civil flying will not be possible until the International Regulations for the Control of Aviation are published.

### 2. Airship and Balloon pilots

- The regulations dealing with airship and balloon pilots are not yet completed.

### 3. Air routes and Aerodromes.

- The air routes and aerodromes so far selected are necessarily tentative, and their permanent retention depends on the value of this newly inaugurated system justifying the cost of maintenance.
- This consideration accounts for the fact that at present only two official aerodromes in Scotland are included in the list and none in Wales.
- With the growth of civil aviation and the increasing output of aircraft it may be desirable to open up fresh aerodromes.

### 4. Prohibited Areas.

## Notes on "Civil Aviation"

- The list of areas over which flying is prohibited given in Schedule 6 of the Air Navigation Regulations was drawn up to meet war needs, and will remain in force pending the conclusion of peace, when it is hoped that they will be much reduced.
- A further announcement on the subject will be made in due course.

### 5. Accommodation at Aerodromes.

- At each aerodrome, mentioned in the list published on April 25, a hut, or part of a hut will be placed at the disposal of civilian aviators as an information bureau, and an officer will be detailed to give information and render every assistance to those requiring it.
- Information as to the cost of petrol, oil, etc., will be posted up inside the hut, and it is hoped that a regular service of meteorological bulletins and other useful information will shortly be available.
- These huts will be clearly marked with the letters C.A.T.O. (Civilian Aviation Transport Office).

### 6. Aerodromes - Hangars

- Owing to the shortage of labour and other causes it has been found impossible to equip certain of the specified aerodromes with suitable accommodation for machines by May 1.

### 7. Inspection of Aircraft at Aerodromes.

- It will be noted that a necessary part of the aerodromes management is the provision of licensed ground engineers.
- As there has not yet been time for firms to provide these, the A.I.D. has been called upon, as a temporary measure, to provide a certain number of skilled personnel to assist.
- It must be remembered, also, that it is only from aerodromes where licensed ground engineers are located that aeroplanes can start.

### 8. Military Markings.

- The bulk of machines which will at first take part in civil flying, having been built as Service machines, are marked with red, white and blue rings, and bear Government numbers.
- The existing Government numbers will be allotted to these machines as temporary registration marks.
- When permanent marks are allotted the old registration numbers must be erased and the new permanent marks put on within 14 days of allotment.
- Owners of aircraft upon which the service ring markings are painted must obliterate them.

### 9. Petrol and Oil.

- Petrol, oil and small spare parts, such as sparking plugs, etc., will be purchasable.
- The following retail prices have been fixed :

### 10. Accidents.

- Accidents to all aircraft other than those of a minor nature must be immediately notified by telegram to the Air Ministry (Accidents, "The strand" London), with a view to preliminary enquiry into the nature of the accident.
- This notification will be made by owners, their representatives, or the Civil Authority.
- The Air Ministry will then decide whether detailed investigation is required.
- Until the decision of the Air Ministry has been given, the wreckage of any machine to which an accident has occurred must not be disturbed.
- A formal release for the removal of the wreckage will be given by the Air Ministry.

### 11. Air Licenses

All applications for licenses of every class, aerodromes, air-worthiness of machines, pilots, ground engineers, etc., should be addressed to the Air Ministry (C.G.C.A.).

June 1919 : USA : MECHANICAL ENGINEERING : The Journal OF THE Am.Soc.OF M.E. : pg 40a : Aeronautics - Regulations : Regulations for Air Navigation. Automotive industries, vol. 40. no. 15, Apr. 10, 1919, pp. TS2-785. Project of Int. Convention regarding air navigation.

05 June 1919 : Parliament : UK : Parliamentary discussion re R.A.F. Officers Category "A" vs. Category "B" Technical Pay" <sup>135</sup> :

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<sup>135</sup> Flight 05 June 1919 pg 749

## Notes on "Civil Aviation"

Lieut.-Col. Sir F. HALL asked the Under-Secretary of State to the Air Ministry the following :

1. whether any decision has yet been arrived at as to awarding technical pay to officers in Category B of the Royal Air Force;
2. whether their duties are of less importance than those of the officers in Category A ; and
3. whether, when a decision is arrived at, in the event of it not already having been reached, emoluments will be made retrospective to temporary officers as and from the date of the Air Ministry Order of September 26, 1918 ?

Maj.-Genl. Seely responded : This matter has been very carefully considered, and it has been decided not to award technical pay generally to officers in category B, as their duties do not involve the same standard of technical knowledge as those of officers in category A.

05 June 1919 : Parliament : UK : Parliamentary discussion re Surplus R.A.F. Aeroplanes <sup>136</sup>

Col. ASHLEY, on May 29, asked the Under-Secretary of State to the Air Ministry if he will offer to the Overseas Dominions and Colonies some of the surplus aeroplanes now in the possession of the Air Ministry, with a view to their being used for postal and similar services ?

The Under-Secretary of State for Air (Maj.-Genl. Seely) : This question is at this moment being considered. Perhaps my hon. and gallant friend will repeat his question next week. Since I drafted this answer a satisfactory conclusion has been arrived at by the Government and I hope to make a satisfactory announcement when the hon. member repeats his question.

Lieut.-Col. Ashley : Will this be given as a free gift or will it be a purchase?

Maj.-Genl. Seely: As a free gift to the Dominions, the Crown Colonies and to India.

Lieut.-Col. Sir Samuel Hoare asked the Under-Secretary of State to the Air Ministry whether, in view of the high prices now being realised for obsolete and old motor cycles and cars being sold by Government Departments, it would be desirable to offer some of the new aeroplanes, now being broken up by his Department, to the public by auction sale so as to test the market on this matter ?

Maj.-Genl. Seely : The aeroplanes which are being reduced to produce are those which are obsolete for war purposes and unsuitable for civil aviation. His Majesty's Government accordingly could not accept the responsibility of putting them on the market. The responsibility of the Air Ministry ends when they have decided what machines are surplus and which of them are obsolete for service use and unsuitable for civil aviation. Thereafter the question of disposal rests with the Disposal Board under the Ministry of Munitions.

Lieut.-Col. Sir S. Hoare: Why could not the right hon. gentleman put some of these on the market to see if there is a demand for them, and at the same time make it clear that any purchaser purchases them at his own risk ?

Maj.-Genl. Seely : That is a matter for the Disposal Board of the Ministry of Munitions, and questions on that subject should be addressed to them.

Lieut.-Col. Moore-Brabazon : Have steps been taken to dispose of some of these machines to neutral countries for trade purposes ?

Maj.-Genl. Seely : I have just announced the decision of the Government to make a free gift to the Dominions, Colonies and India of those required for certain specific purposes, but the disposal of the machines is a matter for the Disposal Board of the Ministry, and I shall be obliged if the hon. and gallant gentleman will address his questions to them, as they have all the facts at their disposal.

We are very pleased with the announcement: that it has been decided to in- Aeronautics institute a Chair of Aeronautics at the London University, tenable\* at the East London College. We believe this has been in contemplation for some little time, but that the ^ consummation of the idea has been delayed in consequence of more or less active opposition from quarters in which we should have expected welcome and assistance for any scheme for the f&ptherance of scientific study in connection with aeronautics.

There is no need for us to be any more specific than -this just now. There may be more to be said about ^ he official attitude towards the professorships later on, but for the moment it is enough to say that there has been some amount of totally inexplicably Opposition. It may be as well to say that the foundation of the Chair has absolutely nothing to do with the Zaharoff gift for the establishment of a similar, chair at one of the older Universities—a matter which those responsible for the administration of the gift do not appear to have seriously approached as yet.

This is a matter which concerns the University of London alone, which has, entirely of its own initiative, arrived at the conclusion that the scientific study of aeronautics should be at once placed on a sound and proper basis, under the guidance of a competent scientist, and that it is the business of the University to do what it can to assist in filling the hiatus.

We need hardly say that We welcome the action of the University. There are at the present moment hundreds of young men, highly qualified pilots many of them, who are desirous of adopting aeronautics in one or other of its phases as their life's career.

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<sup>136</sup> Flight 05 June 1919 pg 749

## Notes on "Civil Aviation"

They know all there is to be known about the purely practical side of flying, but are very children in its scientific bearings. To such the new departure of the London University means a great deal. It will place at their disposal a highly scientific training with the hall-mark of a London degree at the end for those whose aspirations lead them that way.

In every case it promises to raise the standard of aeronautical study to a very much higher plane than it has occupied hitherto. By the way, and while we are on the subject of scientific training, what has become of the memorandum which the Air Ministry was supposed to be going to issue some time ago? And has the delay in its issue any bearing on the opposition to the East London professorship of which we have spoken? It would be interesting to know.

Aeronautics at London University : AT the meeting of the Senate of London University on May 28, it was resolved to institute a Chair of Aeronautics tenable at the East London College. This is in addition to the Zarahoff Chair of Aviation at the Imperial College of Science and Technology, the first appointment to which has still to be made, although the requisite funds were given to the Government nearly two-and-a-half years ago. We refer further to this matter on page 726.

The Air Ministry Headquarters. : THE Civil department of the Air Ministry now has its headquarters at India House, which is to be the permanent home of the Air Ministry, and the military departments will soon be transferred there. At present the fifth floor of India House suffices, but it is anticipated that eventually the corresponding floors in Empire and Canada Houses will be required page 734

### The Flying Clubs institution

We are glad to see the idea of Flying Clubs is spreading. We do not mean the ambitious schemes which are on foot in some parts of the country, which include the possession of palatial hotels or clubhouses, but the banding together of a few men of moderate means to share the cost of small aerodromes and a machine or two for communal use.

It is suggested that the best way to do this would be to form a large number of such clubs, affiliated to some central body. The Royal Aero Club, we suggest, might, say what it thinks of the idea. In this way arrangements might be made.'

With a large number of aerodromes all over the country, and members could making flying week-end visits from one to the other on machines in which each member's share would be comparatively small.

A certain number of trained mechanics might be required, but, probably a good deal of the overhauling and repair work could be done by the members in their spare time whilst the regular staff of the aerodromes would no doubt always be available for emergency.

This opens up quite a tempting prospect.

The cooperative idea is good and we think would work reasonably well. Rigid methods of inspection of such machines, however, would be a necessity, else we fear the toll of accidents might be initially heavy.

We are not altogether enamoured of the machine which has been overhauled and repaired in spare hours by amateur mechanics who may or may not know anything about the job.

Youth in particular is apt to chance things a little too much, and it would obviously be to the youth of the country that the idea of the flying club would appeal most.

However, this, is a detail which we doubt not can be easily provided against and does not in the least militate against the basic idea of community of interests in flying.

As a matter of fact, we regard the idea as essentially valuable, inasmuch as it can. Only be through something of the sort that flying can more quickly be brought within the reach of the man of restricted means.

Without such, organisation of the pleasure side of aviation, it may have for years to come to remain the pursuit of the privileged few who are able to command a good deal of money and who do not mind spending round sums on a favourite hobby <sup>137</sup>

June 28, 1919 : WWI "officially ends" as lasting Peace is Declared. (Cooling off period until ?)

The Peace Treaty is signed in Versailles; it prohibited Germany to have an air force or produce military aircraft.

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<sup>137</sup> Flight 05 June 1919 pg 726

## Notes on "Civil Aviation"

7 July 1919 : GOVERNMENT HOUSE , OTTAWA.

PRESENT: HIS EXCELLENCY THE GOVERNOR GENERAL IN COUNCIL.

HIS Excellency the Governor General in Council, pursuant to the provisions of the "Air Board Act" is pleased to approve the following regulations, prepared and recommended by the Air Board, and the same are hereby approved and established accordingly :

### Regulations.

1. No aircraft shall fly over any city or town except at such altitude as will enable the aircraft to land outside the city or town should the means of propulsion fail through mechanical breakdown or other cause ; provided that this prohibition shall not apply to any flight undertaken for a special purpose approved by the Air Board, or any area comprised within a circle with a radius of one mile from the centre of an aerodrome approved by or under the control of the Air Board.
2. No person in any aircraft shall—
  1. (a) carry out any trick flying or exhibition flying over any city or town area or populous district ; or
  2. (b) carry out any trick flying or exhibition flying over any regatta, race meeting, or meeting for public games or sports, except where specially arranged for in writing by the promoters of such regatta or meeting ; or
  3. (c) carry out any flying which, by reason of low altitude or proximity to persons or dwellings, is dangerous to public safety ; or
  4. (d) drop or cause or permit to be dropped from the aircraft any article capable of causing injury or damage.
3. Where any aircraft flies in contravention of any provision of these regulations, the owner of the aircraft, and also the pilot or commander shall be deemed to have contravened the regulations ; provided that it shall be a good defence to any proceedings for contravention of these regulations if the contravention is proved to have been due to stress of weather or other unavoidable cause, or to have been approved by the Air Board.
4. Any person contravention any provision of these regulations *shall be liable to imprisonment for a term not exceeding six months or to a fine not exceeding one thousand dollars, or to both* such imprisonment and fine.

These regulations to come into force on the 1st day of August, 1919.

RODOLPHE BOUDREAU, 3-1 Clerk of the Privy Council.

25 August 1919 : The Aircraft Transport and Travel company made aviation history by starting a regular passenger and freight service between London (Hounslow) and Paris (Le Bourget).

25 August 1919 : Toronto to New York Air Race : During the Canadian National Exhibition at Toronto, an air race is held. Toronto to New York. The Aero-Club of Canada issues a special \$1 commemorative stamp which is used to help fund the race by the carriage of Air-Mail between the 2 cities.

25 to 28 August 1919 : representatives of five [private] air transport companies from Denmark, Germany, Great Britain, Norway and Sweden meet at The Hague, Netherlands (KLM) and sign an agreement to form "the *International Air Traffic Association*" (IATA).

01 September 1919 : Ottawa Canada - The Dominion Parliament <sup>138</sup> assembled for the Third Session of the Thirteenth Parliament and was prorogued on the 10th November, 1919.

02 September, 1919 : PEACE TREATY RESOLUTION. 'the Prime Minister moved the following resolution in the House of Commons : - " That it is expedient that Parliament do approve of the Treaty of Peace between the Allied and Associated Powers and Germany . . . which was signed on behalf of His Majesty, acting for Canada, by the plenipotentiaries therein named, and that this House do approve of the same."'. The Prime Minister (the Right Hon. Sir Robert Borden) said that they were assembled to consider the terms of Peace which were presented to Germany after many anxious months of study and debate. Including the British Dominions, who were given in the Peace Conference a place commensurate with the part they had taken in the war, there were thirty two nations assembled in the secret Plenary Session on the

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<sup>138</sup> Journal of the Parliaments of the Empire Vol. I.-No. 1. January, 1920. pg 87-



6th of May at which those terms were unanimously adopted. He did not claim that there was no hesitation or even that there was no protest. Probably not a single nation and he did not except Canada from the assertion was absolutely satisfied with every disposition contained in the Treaty. But there was the great outstanding fact that thirty-two nations of varying and sometimes conflicting ideals and aspirations did finally give their undivided assent to a treaty which whatever its imperfections might be, was designed in all sincerity to assure the future peace of the world. It was unquestionable that the Treaty should be submitted to Parliament for its approval before ratification on behalf of Canada took place. The formal ratification was in the name of the Sovereign ; but in giving that ratification on behalf of Canada, His Majesty necessarily acted at the instance of his constitutional advisors in that country.

The League of Nations.

After alluding to the necessarily severe character of the Treaty, the Prime Minister proceeded to describe its terms. He observed that to deprive Germany of her entire Colonial Empire was a stern though just measure. Referring to the League of Nations, "a covenant founded upon the solemn and unanimous affirmation of thirty-two of the world's nations that not force, but right and justice shall be the arbiter of international disputes," he stated that the Canadian delegates took exception to certain of its original provisions, and that their views were set forth in a confidential memorandum. Many of their objections were met in the revised draft, and as to the others, they felt that important as they regarded them, they ought not to be accounted of moment in comparison with the supreme purpose embodied in the Covenant.

Representation at Peace Conference.

After paying a tribute to the absolute co-operation and understanding with which the representatives of Great Britain and the Dominions had worked, the Prime Minister considered the character of the representation secured by Canada at the Conference, her position as a signatory of the Treaties concluded there, and her status as a member of the League of Nations and of the International Labour Convention. He stated that the sessions of the Imperial War Cabinet held in the spring of 1917 and in the summer of 1918, afforded in a certain measure the means of carrying out of this understanding (concerning the terms of peace). After the Armistice, his proposal was adopted first by the Imperial War Cabinet, and, after considerable discussion, by the Conference, that there should be a distinctive representation for each Dominion, similar to that accorded to the smaller allied powers, and in addition that the British Empire representation of five delegates should be selected from day to day from a panel made up of representatives of the United Kingdom and the Dominions. The adoption of the panel system gave to the Dominions a peculiarly effective position. At plenary sessions there were sometimes three Canadian plenipotentiary delegates, two as representatives of Canada and one as representative of the Empire. Dominion Ministers were nominated to and acted for the British Empire on the principal Allied Commissions



## Notes on "Civil Aviation"

appointed by the Conference to consider special aspects of the conditions of peace. He had himself been called upon to put forward the British Empire case in respect of the Clauses on economic questions, International control of Ports, Waterways and Railways, and on Submarine Cables. During the last month in Paris, he had acted regularly as Chairman of the British Empire Delegation in the absence of Mr. Lloyd George.

Constitutional Status.

(1) At the Conference. Finally, it was desirable to note an important development in the constitutional practice respecting the signature of the various Treaties concluded at the Conference. Hitherto, it had been a practice to insert an article or reservation providing for the adhesion of the Dominions. Now his (the Prime Minister's) proposal had been adopted that the assent of the King as High Contracting Party to the Treaties should, in respect of the Dominions, be signified by the signature of the Dominion plenipotentiaries, and that the preamble and other formal parts of the Treaties should be drafted accordingly. This important constitutional development involved the issuance by the King of full powers to the various Dominion plenipotentiary delegates, and in order that such powers issued to the Canadian plenipotentiaries might be based upon formal action of the Canadian Government, an Order in Council was passed on April 10th, 1919, granting the necessary authority. This new and definite status of the Dominions was further manifested in the constitution of the League of Nations as well as the International Labour Organisation.

(2) In the Empire. "The future relationship of the Empire," said the Prime Minister, "must be determined in accordance with the will of the Mother Country and of each Dominion in a constitutional conference to be summoned in the not distant future. Undoubtedly it will be based upon equality of nationhood. Each nation must preserve unimpaired its absolute autonomy, but it must likewise have its voice as to those external relations which involve the issue of peace or of war. So that the Britannic Commonwealth is in itself a community or league of nations which may serve as an exemplar to that world-wide League of Nations which was founded in Paris on the 28th of last June. . . . The same indomitable spirit which made Canada capable of that effort and sacrifice (during war) made her equally incapable of accepting at the Peace Conference, in the League of Nations, or elsewhere, a status inferior to that accorded to nations less advanced in their development, less amply endowed in wealth, resources and population, no more complete in their sovereignty and far less conspicuous in their sacrifice. In answer to a question of the Hon. W. S. Fielding as to what difference it would make if the Canadian Parliament failed to ratify the Treaty, the Prime Minister said that in that case Canada would stand out of and apart from the rest of the Empire and would be committed to such independent action that she could not be regarded as acting in co-operation with the other nations of the Empire. He added that the British Government were not disposed to deal with the Treaty, so far as Canada was concerned, apart from the approval of the Canadian Parliament.

## Notes on "Civil Aviation"

The League of Nations.

Article VIII. of the League involved the maintenance by Canada of a standing army. Article X. might involve her entry

PEACE TREATY RESOLUTION. 91

entry into any petty quarrel between small nations, while constitutionally Canada was only bound by what she agreed to do by virtue of the machinery provided by and for the British Empire of which she was a component part.

In Article XVI. they said that they would refuse to have any intercourse with any member of the League that went to war without the consent of the whole League. Their plenipotentiaries undertook to say that Canada had signed the Covenant apart from Great Britain, and Canada might possibly put herself in the position of being in arms against the Mother Country.

Ratification.

Turning to the question of ratification, Mr. McKenzie said that this was unnecessary in so far as it concerned the Canadian Parliament. Ratification, in the words of Mr. Lloyd George, was for the Crown; and the Treaty, having been signed by the King, was already absolutely obligatory. The plenipotentiaries had received their commissions from the King, and they signed the Treaty as his direct representatives.

The Minister of Public Works (Hon. A. L. Sifton) said that this was the first time within the confines of the British Empire in which any Parliament had been asked to approve a Treaty. The Treaty had not yet been ratified. When it was, it would be ratified by the King of England on behalf of the United Kingdom on the advice of its Government, and on behalf of Canada by the King of the British Empire upon the advice of the Government of Canada. This was in accordance with the promise made in Parliament by the Prime Minister that before ratifying the Treaty he would submit it to Parliament. There was no question in the motion of ratifying the Treaty. It was a motion to approve as a whole or disapprove of the Treaty. Here was an example of the most radical change in the constitution of this portion of the Empire in the submission to Parliament of the Treaty which the Government, under the British Constitution, might have ratified by an Order in Council. The powers given by the King to the plenipotentiaries were not powers to act for the British Empire as a whole, but to sign treaties for the Dominion of Canada.

The Hon. Dr. Henri S. Beland\* (Liberal, Beauce, Que.) [Dr. Beland, who was Postmaster-General in Sir Wilfrid Laurier's Administration, was taken prisoner in Belgium early in the war and remained a civilian prisoner in Germany during a great part of the war.] was of the conviction that no consequence of any importance

to Canada, nationally or internationally, would result from their abstention (from approving the Treaty) any more than if India's approval failed to be given. He was afraid that Canada was gradually assuming more and more international obligations without any corresponding international status. A fever of Imperialism, the main symptom of which was a blind desire to centralise in London the administration of Canadian

## Notes on "Civil Aviation"

affairs, was haunting the minds of some of their public men. In the interest of the solidarity and the permanence of the Empire it was the duty of the Canadian Parliament to resist that tendency. Not being a sovereign state, Canada could well have left it to the representatives of Great Britain to enter the League of Nations. In such an event, ipso facto Canada, as an integral part of the Empire, would have been a member of the League and would have shared in its benefits without being exposed to most difficult and dangerous situations politically and militarily. He believed that England herself would rather not have Canada join the League. Great Britain was satisfied that whenever her interests or those of the Empire were threatened she could count on the generous co-operation of her leading Dominion Canada.

Canada Contracted into the League.

It was quite proper and he was glad that Canada should be invited to the Peace Conference, but the Treaty was made between the British Empire and the other Powers, and whether they approved it or not, it bound the whole of the British Empire including the Dominion of Canada. The Prime Minister described their membership in the League of Nations as a further manifestation of their new status, but they were made members of the League by no act of their own but by the high contracting parties, of which Canada was not one except as part of the Empire. They were contracted into the League. If the opinion of President Wilson, given to a Committee of the United States Senate, was correct, they were not enjoying



a full and separate membership in the League ; they were a mere addition to the voting power of the British Empire when questions in which the Empire had no concern were discussed and decided upon. If that opinion was erroneous, and they were considered a separate entity in the League, then the consequence of Article XVI. would be that they would have to redeem their obligations and side with other members of the League against Great Britain, and thereby cease to remain in the Empire, or else they would have to disregard their pledges and take sides with Great Britain.

## Notes on "Civil Aviation"

Canada without International Status.

US President Wilson had said that if trouble should arise between England and the United States, there would be no trouble with Canada because Canada had no diplomatic relations with the United States and therefore Canada had no international status. How could they be a nation in the true sense of the word if they had no international status? He asked whether the Minister of Justice could contend that Canada was an independent nation when Canada had not a word to say when war was declared and had not a word to say as to the conditions of peace? Another essential condition to the change in their status was to take away from the Mother Country the right to amend their constitution. He hoped that the Minister of Justice would insist upon the abolition of appeal to the Privy Council.

Amendment Moved,

The ratification of the Treaty would bind Canada, but it would bind her subject to the terms of the Canadian constitution. They were going to lose the power of Parliament in determining what part they would take in war if the Treaty was ratified without any reservation whatever. The Prime Minister had said that in anything that might be done with regard to their status the autonomy of Canada was going to be preserved at all costs. He therefore was going to ask his hon. friends opposite to join him in protecting the autonomy of Canada by an amendment, that the following words should be added to the resolution: "That in giving such approval this House in no way assents to any impairment of the existing autonomous authority of the Dominion, but declares that the question of what part, if any, the forces of Canada shall take in any war, actual or threatened, is one to be determined at all times as occasion may require by the people of Canada through their representatives in Canada."

"Nationhood

was a matter of fact; it was not a question of what was written in a statute book or what was endorsed by one nation in relation to another. When His Majesty the King came to act and the signature of the British Empire had to be attached to the Treaty, to provide the signature of the British Empire there were required the signatures of those statesmen specially representative of the United Kingdom and of the Crown Colonies and dependencies plus the signature of Canada, plus the signature of Australia, plus the signature of New Zealand, not because they pretended to be nations separate from the British Empire but because they were the nations that composed the British Empire."

*the British Empire, apart from the Crown Colonies and so forth, consisted of some five self-governing nations.*

"The United Kingdom," he said "is not in itself the British Empire; it takes all these nations to make up the Empire. And when the British Empire makes a Treaty it is fitting that the whole of the Empire should join in making it"

JOURNAL OF THE ENGINEERING INSTITUTE OF CANADA Engineering Index

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## Notes on "Civil Aviation"

Original draft of recently established Air Board for control of aeronautics.

07 October 1919 : foundation of the *International Air Traffic Association* with its Central Office at The Hague.

IATA's expressed aim is the establishment of unity in the operation of air routes of affiliated organizations whose systems were of international importance.

The *International Air Traffic Association* was limited to the original European signatories until 1939, when Pan American Airways joined.

October 13, 1919 : A Convention was signed in Paris for the purpose of applying certain rules about international air navigation.

In Britain the Air Navigation Act, 1920 was subsequently passed - to enable British enterprise into the French Convention. Among other details of the Act, provision was made for the Licensing, inspection and regulation of aerodromes. Also access to aircraft factories for the purpose of inspecting work in progress was another important part of the Act.

In October 1919, with the choice of types close to being finalized, the Canadian Air Board requested more single-engined float planes, or types easily converted to that configuration, for "forest and survey experiments."

Royal Air Force surpluses did not include such machines, so none were forthcoming.

The aircraft offer had surprised the Air Board. It was just beginning to organize itself, **and had no technical staff to advise on the selection of machines. Canadian aerial veterans joining the Air Board brought their knowledge of different aircraft types, and a lack of expertise was superseded by a cacophony of conflicting opinions.**

One voice quickly became dominant and it belonged to Lieutenant-Colonel Robert Leckie who had taken up the appointment of director of flying operations. Amid exchanges of telegrams between Canada and Britain, packing of the aircraft proceeded apace at Shoreham. Major Donald MacLaren initially supervised the work. On his return to Canada in November 1919 he was succeeded by Maj. James A. Glen. Shipping began in December 1919 and continued until May 1921.

Initial uncertainty about the compatibility of imperial and Canadian objectives held up the first consignment by at least one month; further delays arose from the inadvisability of dispatching aircraft as deck cargo during winter.

Thus, the bulk of the Imperial Gift did not leave Britain until the summer of 1920. Apart from the aircraft, the gift included engines, cameras, at least 31 prefabricated hangars, seaplane beaching gear and motor transport.

Most of this eventually reached Camp Borden in Ontario, where it was stored, assembled or forwarded elsewhere under the supervision of Captain George O. Johnson who had formerly been engaged in the assembly and exhibition of German aircraft shipped to Canada as war trophies.

15 January 1920 : The first "Gift" airplanes arrive in Canada.

There was a shortage of trained aircraft mechanics to assemble them. Once deliveries increased, a work routine evolved. Uncrated aircraft were checked scrupulously while being assembled. Rubber connections were replaced, registration markings painted on wings and fuselages, and the paperwork of formal registration completed.

Each machine was test flown for at least one hour. Once deemed fit, it was either assigned to the "CAF at Camp Borden" or dismantled and packed for rail shipment to an "Air Board flying station".

After many suggestions and changes, the final mix of aircraft consisted of the following types:

### Lighter-than-Air-Craft

I. Non-Rigid Airships (SSZ and ZSSC class airships) : 6, possibly 9 total

A. airships unpacked, assembled and inflated : 1 - as a test,

II. Kite Balloons : 30

III. Lighter-than-Air-Craft spares and accessories:

A. "airship cars" : 17

B. "silicol plants" (used to manufacture hydrogen) : 6

IV. Lighter-than-Air-Craft "Ground Handling Equipment":

A. compressors,

B. winches

## Notes on "Civil Aviation"

- C. special trucks : 4
- V. Heavier-Than-Air-Craft
  - A. Royal Aircraft Factory B.e.2C : 2
  - B. Curtiss H-16 flying boat : 2
  - C. Bristol F-2b fighter : 2
  - D. Sopwith Snipe : 2
  - E. Fairey Mk3-C Seaplane : 1 (assembled by Canadian Vickers in Montreal)
  - F. Royal Aircraft Factory Fe.2D : 1
  - G. Vickers F.B.9 : 1, along with some "replacement airframes",
  - H. Avro 504 : 62
  - I. de Havilland DH-4 : 10 (11?)
  - J. de Havilland DH-9 : 12 (13?)
  - K. Royal Aircraft Factory Se5a : 12
  - L. Felixstowe F-3 flying boat : 8
    - 1. One F-3 was assembled, registered, but not given a certificate of airworthiness and never flown.
    - 2. At least one F.3 assembled by Canadian Vickers in Montreal.
    - 3. Two "crated" F.3s were shipped directly to Vancouver for assembly.
    - 4. Crated F.3's were sent to Victoria Beach, Manitoba.
    - 5. Crated F.3's were sent to Dartmouth, Nova Scotia.

Not all Imperial Gift aircraft were immediately assembled.  
At least nine Imperial Gift aircraft never left their crates.  
bringing the total to 120 Imperial Gift aircraft.

Canadian officials had been excited at the prospect of acquiring lighter-than-air material, of which there was a considerable surplus, for topographical surveys.

Air board members, prepared to take almost anything the British had to offer, underestimated the adaptability of airplanes and overestimated that of airships.

The Air Board also borrowed airship specialist Flight-Lieutenant John A. Barron from Britain.  
Flight-Lieutenant Barron was one of the few Canadians who had acquired airship experience. As it turned out, there was almost nothing for him to do. Although one airship was unpacked, assembled and inflated as a test, almost all the lighter-than-air material remained crated.

Flight-Lieutenant John A. Barron transferred from the Air Board's Flying Operations Branch to the Technical Services Branch, where he assumed the title of assistant director of technical services.  
Flight-Lieutenant John A. Barron was thus available to any party that might need airship advice.

One firm, the Keewatin Lumber Company, proposed using airships in its operations, but advanced no concrete plans.

March 1920 : only 3,280 officers and 25,000 other ranks remain in the RAF. More than 23,000 officers, 21,000 cadets (potential pilots) and 227,000 other ranks had been demobilized. Vast quantities of surplus equipment, aerodromes and landing grounds had been returned to their original owners or sold off at rock-bottom prices.

March 1920 : The Women's RAF, created on 1 April 1918 is completely disbanded

March 1922 : Flight-Lieutenant John A. Barron was "let go" from the Air Board.

Balloon and airship envelope material served as roofing repair material at Camp Borden and Ottawa.

6 February 1923 : Air Board issues disposal instructions for lighter-than-air material, "an enormous stock of junk".  
1925 : National Defence Headquarters orders the destruction of "whatever lighter-than-air material remains".

07 October 1920 : several Imperial Gift aircraft in the public spotlight as participants in the Trans-Canada Flight.  
The event was not a continuous expedition but a series of hops by different crews using different aircraft.

## Notes on “Civil Aviation”

07 October 1920 : the sole Fairey 3C crashes en route from Halifax to Saint John, fortunately without injury to the pilot, Lt.-Col. Leckie.

Lt.-Col. Leckie. returns to Halifax and switches to a Curtiss HS2L flying boat.

08 October 1920 : Lt.-Col. Leckie and Curtiss HS2L reach Rivière-du-Loup, Que. Felixstowe F3 substituted for Curtiss HS2L

11 October 1920 : 14 stops (made where?) later, Lt.-Col. Leckie and F-3 arrive at Winnipeg. DH.9 substituted for the Felixstowe F.3

17 October 1920 : Lt.-Col. Leckie and DH.9 arrive at Vancouver after mechanical and weather delays, an adventurous flight through the Rockies and 11 landings (made where?).

The Imperial Gift machines figured in other significant Air Board operations.

Autumn 1920 : 1 Avro 504K and 1 Bristol F.2b, flying from the Rockcliffe Rifle Ranges near Ottawa, experiment in adapting wartime photographic reconnaissance methods to aerial mapping.

The Avro proved unsuitable (low ceiling, vibration) and the Bristol was too sensitive at the controls to be good photographic aircraft but the concept was considered sound, provided better machines could be employed; the DH.4 and DH.9 were considered best candidates.

Many of the types were employed in “double duty” functions.

The Avro 504Ks at Camp Borden shuttled between training work and participation in militia exercises throughout Ontario. Similarly, the de Havilland aircraft based at High River, Alta., were switched between forestry, photography and militia training tasks. Some of the militia work consisted merely of taking up officers to familiarize them with the appearance of a mock battlefield. **Canadian authorities occasionally tinkered with the aircraft.**

The DH.4s, as received, were judged “difficult” machines, and several were converted to the American DH.4B standard, moving the fuel tank from a point between the two cockpits to immediately in front of the pilot’s cockpit. This placed the tank nearer the aircraft’s centre of gravity, and thus ensured greater stability as fuel was consumed (the standard DH.4 tended to become nose-heavy during flight).

No amount of modifications could make the open-cockpit DH.4s comfortable in winter; official issue clothing (designed for wartime France) was often inadequate. Flying boots were sometimes discarded in favour of locally produced moccasins. Some of the aircraft types proved disappointing under Canadian conditions.

The Felixstowe F3 flying boats were cumbersome in all but the most spacious lakes. Their size also complicated the standard method of moving aircraft long distances—disassembly, transport by rail, re-assembly at the intended operating base. Felixstowe F3 flying boats were costly to operate, and because the various F3s had been built by different contractors, they differed in detail one from another, complicating maintenance.

Felixstowe F3 flying boats in Manitoba were constantly being damaged in shallow lakes with consequent operational delays.

On Sept. 29, 1922, the superintendent at Victoria Beach Air Station was advised to scrap his Felixstowe F3 flying boats, sending spare parts on hand to Vancouver while salvaged instruments and engines were to be shipped to Ottawa.

An F3 accident near Vancouver on July 24, 1921 underlined a surprising problem.

None of the five occupants were injured, but the court of inquiry blamed the pilot for alighting too quickly.

The most striking observations came from Col. Robert Leckie.

Col. Leckie concluded that Canada in general—and the Pacific coast in particular—had a shortage of “experienced seaplane pilots.” Leckie noted that “it is now necessary to select good aeroplane pilots and train them in seaplane work.”

Although Canada had emerged from WW I with a large body of flying talent, it was not immediately balanced to meet national needs—too many landplane veterans as opposed to the floatplane and flying boat experts most urgently needed (and who knows, maybe too many ex-fighter jocks?)

The defects of the Felixstowe F3 flying boats became more obvious when compared with another type of aircraft.

Independently of the Imperial Gift, the Air Board had acquired 12 HS2L single-engined flying boats that had been flown by the United States Navy.

Although lacking the load capacity of an F3, they were reliable and adaptable to operating from confined spaces. The Felixstowe F3 flying boat needed 56 inches of water for safe launching, compared to 34 inches for an HS2L.

## Notes on "Civil Aviation"

The aircraft were flown in relatively primitive conditions.

Land bases were improvised from whatever flat terrain was available, accessible to the operations site and reasonably free of obstructions such as trees or windmills.

That still left hazards such as hillocks, gopher holes and sandy soft spots.

Even Camp Borden, a training base since 1917, was not immune.

Typical of the accidents resulting was that of a DH.9a that ran into a sand hole at Camp Borden on Jan. 12, 1921. The pilot was unhurt, but the aircraft had to be rebuilt.

By the summer of 1927 the continued reconditioning of DH.9a machines was deemed uneconomical and the five surviving aircraft were reduced to spares. By then, little beyond wire rigging could be recycled into current equipment.

Although relatively new when acquired, the Imperial Gift machines deteriorated quickly in Canadian climates marked by extremes in temperature and humidity plus frequent sharp fluctuations of both.

At the conclusion of the 1921 flying season, the DH.4s at High River were stripped down and examined. The commanding officer reported wooden components being warped and distorted; they needed rebuilding or replacement.

The non-durability of Imperial Gift aircraft in Canada contrasted with RAF experiences.

The RAF kept many of its WW I designs operational for years.

RAF DH.9s remained in British-based service until September 1930.

In the Middle East, RAF DH.9s continued as combat aircraft until May 1930.

Newer types of aircraft (Vickers Vikings) were appearing as early as 1923.

1926 Avro 504K receives a new lease on life, re-engined with Lynx radials and designated Avro 504N. (The longest serving Imperial Gift type was the 504)

1928 : DH.60 Moth service introduction. Beginning of the end of the Avro 504 types.

Aircraft seriously damaged in crashes were usually written off;

ageing machines were frequently converted to "instructional airframes" used by trainee mechanics much as medical students practised on cadavers.

Even the "instructional airframes" outlived their usefulness.

1932 : officers note that four years after being torn down and rebuilt, a scrapped Avro 504 was "in such a state that it has become necessary to employ methods that are distinctly misleading and thoroughly inadvisable."

November 1934 : The last of the "Imperial Gift" aircraft, an Avro 504K, was written off in having spent six years as an instructional airframe.

If the aircraft had lived finite lives, some equipment had been more durable.

A gantry crane delivered in 1920 was still in service at Camp Borden in 1938.

Initially used to assemble Imperial Gift aircraft, the gantry crane was used in erecting aircraft for re-arming Canada in WWII.

- See more at: <https://legionmagazine.com/en/2004/09/the-imperial-gift/#sthash.1ZCw3UB7.dpuf>

1919 : First air transport organization in Belgium - the Syndicat National pour l'Étude des Transports Aériens (SNETA) is formed and acts as the Belgian national flag carrier until May 1923.

DeMob and RESETTLEMENT .

THERE are many officers and men of the R.A.F., who are demobilised or are about to be demobilised.

In order to assist those who are undecided or are seeking advice as to their prospects in civil life, the Editor has arranged for an expert, with wide experience of service, industrial and educational conditions, to give advice to those who may solicit it through the medium of this Journal.



## Notes on "Civil Aviation"

Applications, which must be in writing, should be marked Resettlement, and addressed to the Editor, FLIGHT, 36, Great Queen Street, Kingsway, W.C. 2. They will be dealt with in these columns, as far as possible, in rotation.

There are two main types of employment in civilian aviation :

- (1) Technical; considerable practical and theoretical training is required such as a diploma or degree in mechanical engineering at some recognised college or university, and some practical workshop experience
- (2) Piloting : a certain amount of technical training is required in addition to flying experience.

AMBITIOUS, R.N.A.S. It is fairly clear that as comparatively few personnel will be required in the immediate future for commercial aviation

only those possessing the highest qualifications will, in the ordinary course of events, succeed in obtaining employment in civilian aviation. We think that unless you are prepared to take a course of mechanical or aeronautical engineering of at least two years duration you will be best advised to seek employment based on your pre-War training.

H.S.W.S., EX-OFFICER, R.A.F.—There are certainly as good prospects for draughtsmen in aeronautical engineering as in any other branch of engineering. With regard to a better position later on, this will depend on the efforts you make to acquire the necessary experience for design. In aeronautical engineering (design) a sound knowledge of mathematics is essential in order to study the results of research and to apply the knowledge gained to practice. We regret you are not satisfied with your present position, but in view of the present labour market you should be very cautious.

### R.A.F. Officers (Technical - Pay) 1919

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Lieut.-Col. Sir F. HALL asks the Under-Secretary of State to the Air Ministry (Maj.-Genl. Seely):

1. whether any decision has yet been arrived at as to awarding technical pay to officers in Category "B" of the Royal Air Force
2. whether the duties of officers in Category "B" are of less importance than those of the officers in Category "A" ; and
3. whether, when a decision is arrived at, in the event of it not already having been reached, emoluments will be made retrospective to temporary officers as and from the date of the Air Ministry Order of September 26, 1918 ?

Maj.-Genl. Seely : This matter has been very carefully considered, and:

1. it has been decided not to award technical pay generally to officers in category "B", as
2. their duties do not involve the same standard of technical knowledge as those of officers in category "A".

08 January 1919 : (Source : The Aeroplane - ON THE R.N.A.S. IN 1918 by C.G. Grey)

There were four categories of work for members of the WRAF:

A – Clerks and typists;

B – Household such as cooks, waitresses and domestic workers;

C – Technical such as tinsmiths, photographers, metal workers, wireless operators and carpenters; and

D – Non-Technical or General, which included tailoresses, shoemakers and motor cyclists.

The majority of the work was for clerks and typists.

The household workers endured the toughest work and the longest hours.

The technical section offered the greatest range of employment and was one of the few sectors during the war where women were trained for skilled positions.

The WRAF was nicknamed the 'Penguins,' because, like the birds, they did not fly.

the Navy is determined to have its own Air Service again.

If the sea-going people of the R.A.F. do go back to the Navy, they will probably not be called the R.N.A.S., for their officials at the Admiralty would scarcely lose the opportunity of making the personnel buy new uniforms and thus of putting more money into the pockets of their friends the Naval outfitters.

The chances are that they will merely come in as Naval officers:

Lieut. (A.) and Lieut. (O.), for aviator and observer, and

Lieut. (A.E.) for aircraft engineer, or something on those lines, and

## Notes on "Civil Aviation"

the air mechanics will become aircraft ratings analogous to torpedo or engine-room or stoker ratings. All of which would be as it Image : Fairey "Campania" RNAAeroplane 08 Jan 1919.



should be, and as was advised in this paper long enough before the war. those holding PCs to be the senior and Air officers of the future. He envisaged the course as giving

In a paragraph of the Memorandum entitled "Extreme importance of training" Trenchard outlines his vision for the training of officers and airmen. "a thorough grounding in the practical and theoretical aspects" of being an Air Force officer *"and in addition" the cadets would learn to fly.*

The words "in addition" are highly significant. Trenchard saw the cadets as becoming "officers" first and foremost and pilots second.

The fact that they had to learn to fly as well was a peculiarity of the RAF. He intended that the RAFC would equip them with the knowledge to undertake the usual tasks and duties of an officer in a similar vein to those in the Army or RN.

This involved the leadership of men. This knowledge would be developed during their career so that they would be to fit organize and operate a Service which coincidentally happened to fly aircraft in its fighting role.

Formerly when an R.N.A.S. officer went aboard a ship or entered a Naval mess ashore he was treated with the same cold courtesy which is extended to a not particularly popular civilian.

He was never one of themselves.

In these days an R.A.F. officer in correct uniform under the same circumstances is treated with the same cold courtesy, unless the removal of an overcoat displays a D.v.S.C. ribbon, or a casual remark reveals that he was once R.N.A.S., in which event the Navy promptly falls on his neck and welcomes him as a long-lost brother, and he is lucky? - if he gets out of the ward-room while still sober.

Pilots writing into the "Aeroplane" magazine :

the risks which the active-service people were, and are, ready to take in the King's Service, despite being let down time after time by brainless chiefs or intriguing officials at home.

the "brains" of the technical departments did not think much of seaplanes with high performances, and spent their time playing with other things. Not knowing much about the war they were full of theories, and nothing much else.

### THE FREEDOM OF CIVILIAN FLYING.

On January 8th Major-General Sir Frederick Sykes, K.C.B., C.M.G., D.S.O., Chief of the Air Staff, R.A.F., (one of the earliest Royal Flying Corps officers. He was Commandant of the Military Wing, R.F.C., when that Corps was first formed, and held that post until the outbreak

of war, when he went to France with the historic first five squadrons. Thereafter he commanded all R.N.A.S. units in the Eastern Mediterranean, and subsequently severed his connection with flying altogether in order to take up an appointment at the War Office. On the resignation of Major-General Sir Hugh Trenchard, General Sykes was appointed Chief of the Air Staff, which post he has held ever since.) Sykes - Chief of the Air Staff, read a most interesting paper on the developments of aerofautics to the London Chamber of Commerce at the Cannon Street Hotel January 8<sup>th</sup> 1919. As this paper was going to press at the time, it has been impossible to report the lecture, but it is hoped that it will appear in extenso next week. It is necessary, however, to give all possible publicity to General Sykes' official statement that a new code of regulations for civilian flying is now being drawn up, and will be presented to Parliament when the House assembles. It is hoped by those responsible for them that these regulations will come into force within a very few weeks of their presentation and that civilians will soon be free to fly again without military restrictions. The regulations will be published shortly.

General Sykes is essentially a soldier, and has been a close friend of General Sir Henry Wilson, Chief of the Imperial General Staff, and therefore if it comes to pass, as is rumoured, that the military side of the Royal Air Force goes back under the control of the War Office, there is no doubt that the fact of his holding the post of Chief of the Air Staff will make for smooth working with the Army Chiefs.

Major-General Sir John Maitland Salmond, K.C.B., C.M.G., C.V.O., D.S.O., G.O.C. R.A.F. with the Army in France during the whole of 1918, is an outstanding example of the triumph of the regimental officer. One believes that it is correct to say that until his appointment as Brigadier-General Commanding a Brigade of the R.F.C. under General Trenchard, General Salmond had never held a Staff appointment.

He learned to fly at his own expense at Hendon in 1912, and he joined the R.F.C. as a Captain of Infantry, being then an officer of the King's Own (Royal Lancaster) Regiment. His promotion, though rapid, followed orthodox lines, and at the outbreak of war he took the famous No. 3 Squadron from Netheravon to France as a Major. In 1917, when he commanded a Brigade in France, he was sent to England to command the Training Brigade, which later became the Training Division, with promotion of its G.O.C. to Major-General. In that position he laid down that whole "scheme" (Programme) of training for the R.F.C. which has proved of such excellence that it has enabled the R.A.F. pilots during 1918 to hold the command of the air

— which they won in 1917—despite the fact that, with hardly an exception, they were still mounted on machines which were in use in 1917. The system of training instituted during 1917 has been one of the most brilliant successes of the War, and though the general mis-organisation of the R.A.F. during 1918 has unfortunately done much harm

## Notes on "Civil Aviation"

to its efficiency, the system itself can still be revived under improved organisation at any future date. General Salmond's name deserves to be famous in history not merely for his brilliant handling of the R.A.F. in France during 1918 and for the excellence of his Staff work, and for the wonderful confidence which he has the genius for instilling in all those who serve under him, but for the fact that the training system which he inaugurated at home laid the foundation for his own success in the Field.—C. G. G.

### Aeroplane - Jan 08 1919 - THE INFLUENCE OF OFFICIAL CONTROL UPON THE DESIGN OF AIRCRAFT, 1914-1918 By "STRASBOURG."

It is fairly obvious that the time has not yet arrived when a history of the activities of the various technical branches attached to the permutations and combinations of H.M. Naval and Military Air Services can be compiled in any detail, nor is it yet possible to give in any semblance of their true perspective an account of their actions and reactions in regard to specific matters. The sum of the effects which have been produced under the impelling stress of war in the design of aircraft, to consider if those effects show the development of the art to have made progress commensurate with the energy which has been expended thereon during that period.

It must be acknowledged that, on the score of reliability and performance, the aeroplane has progressed probably as far as any but the uninformed would have cared to prophesy three years ago, a close examination of the aircraft of to-day<sup>7</sup> reveals the fact that very little has been achieved to-day that could not have been achieved in 1914, had motors of the same power, weight, reliability, and economy then been available.

#### Relative Performances.

For, when the matter is explored, the differences between the performances of to-day and the performances of July, 1914, resolve themselves almost entirely into the difference between that of a machine carrying 7<sup>7</sup> lbs. per h.p. and one carrying 17 lbs. per h.p., and that the 17 lbs. per h.p. machine of to-day is very little superior to the best designs of approximately similar loading of 1914.

To this it will be at once objected that, owing to the refinement of design, the 17 lbs. per h.p. machine of to-day carries a much larger proportion of its total weight in the form of useful load, and that this is the measure of the actual advance. This view is just, but in assessing the extent of the technical progress which is indicated by this improvement, due allowance must be made for the extent to which it has been made possible by the improvements in motors owing to the possibility<sup>7</sup> of obtaining materials and accessories which were prohibited by their cost to those who attempted to build aircraft in pre-war times.

The structural design of aircraft has undoubtedly improved generally; reasonably accurate methods of estimating the loads and stresses to which the structure may be subjected have become more widely known, and a more economical use of material has thereby become general.

For this dissemination of knowledge the official controllers of aircraft design may claim some credit. Further improvements in the general average of structural design have resulted from the influx to the Industry, under the compulsion of war conditions, of a considerable number of engineers and engineering draughtsmen possessing experience of structural design in other branches of engineering.

#### An Unaltered Structure.

But in spite of these improvements—refinements is possibly a more correct term—the aeroplane structure of to-day is the aeroplane structure of 1913-14 in all essentials, and there is nothing to show that, given the same plant and materials as are now available, the best designers of 1914 would have fallen appreciably behind the present-day standard of structural design.

There remains only to consider the aerodynamic features of the aeroplane of to-day. Have they improved

appreciably ?

The most cursory examination of the aircraft at the beginning and the end of the war will suffice to show that no startling innovation in regard to the general disposition of surfaces has occurred.

Probably the most noticeable change in this respect is the nearly universal use now of a fixed vertical fin in front of the rudder, a feature frequently absent in prewar machines.

It requires a very minute search to discover grounds for supposing that any machine in general use to-day has been more completely faired in its lines with a view to the avoidance of unnecessary air resistance than, say, the two-seater Avro of 1914 or the Sopwith "Tabloid." There has been a levelling-up of the average machine to something considerably nearer the best in this respect, but fairly general use of "streamline" wires on highspeed machines is the nearest approach to a revolutionary change.

Aerofoil Design.

Has there, then, been any very great improvement in the form and efficiency of the supporting surfaces employed on the modern machine ?

There have been made a vast number of tests upon aerofoils of all varieties of section, of the effects of using these aerofoils in various differing combinations and relations the one to the other, and there is in existence a 1 immense bulk of documents relating to such tests. These documents are not yet available for publication, but when, and if, they are published it will become possible to point out from amongst them some results which should lead to very important developments in aerodynamic design, more particularly amongst the tests of certain aerofoil sections which have very different characteristics from those now in general use.

But if one examines the machines which are at present in regular use by the Royal Air Force, it will be found that the great majority employ an aerofoil section: that had been actually tested and flown with success before August, 1914—or a very close imitation thereof.

Considering all these facts, one is forced to conclude that, great as aeroplane achievement has been during the last four years, the art of aeroplane design has undergone no startling change and is directly responsible for a relatively small proportion of the improved performances attained.

Some Further Considerations.

There remain, then, these points—(1) whether this lack of change is due to there being little room for further, improvement in the aerodynamic features of the present aeroplane, or whether the period of relative stagnation has been due to the suppression or discouragement of experimental work in the realm of applied aerodynamics ; and (2) if such a suppression has occurred, has it been due. to unavoidable causes created by war conditions, or to a mistaken direction on the part of the controlling authorities ? »

To the present writer's mind neither of these points is debatable. Not only is it unthinkable, on general grounds alone, that the field of research offered by aerodynamics has been explored so thoroughly as to leave room for no hope of any great improvement in virtue of better aerodynamic design, but it can be shown on the basis of tests carried out by certain branches of the Services that there have been built and flown certain experimental machines with characteristics which very considerably extend the possibilities of aeroplane design in certain important directions, and that the work which was actually carried out in this field was stopped by the prejudices of those in control of, the establishment which made the experiments, at just the period when it was possible to predict with certainty what could be achieved on those lines.

It is interesting to observe that the Civil Aerial Transport Committee has reported on the necessity, for commercial aviation, of exactly the characteristics which the experiments in question successfully achieved over two years ago, and that it is only within the last six months that the 'powers that be, on the urgent representations of one of the few aeroplane designers of imagination who are still permitted to design, have allowed an experimental machine embodying these characteristics to be put in hand.

Nor is this particular case unique. It is, on the contrary, more nearly the normal history of every effort at experimental work of a serious nature which has come within the reach of the authorities in control of aircraft design.

### **Delays in Experimenting.**

Experimental work of a very important nature has been carried on to an eventually successful end under those authorities, admittedly, but generally not until long after the original proposal to undertake it had been turned down, and very rarely has the work been entrusted to the originator of the proposal, or the credit thereof been bestowed upon those who made its success possible.

If these things are so, and they are admitted, in the main, by the ablest of the individuals who make up the amorphous agglomerate which affects technical direction of the Air Force, it is a matter of some importance to attempt to discover why they are so.

### **Good Technical Work.**

It is probably unknown to the majority of the people at home, even to many in the R.A.F., that much of the most valuable technical work in the war has been done overseas.

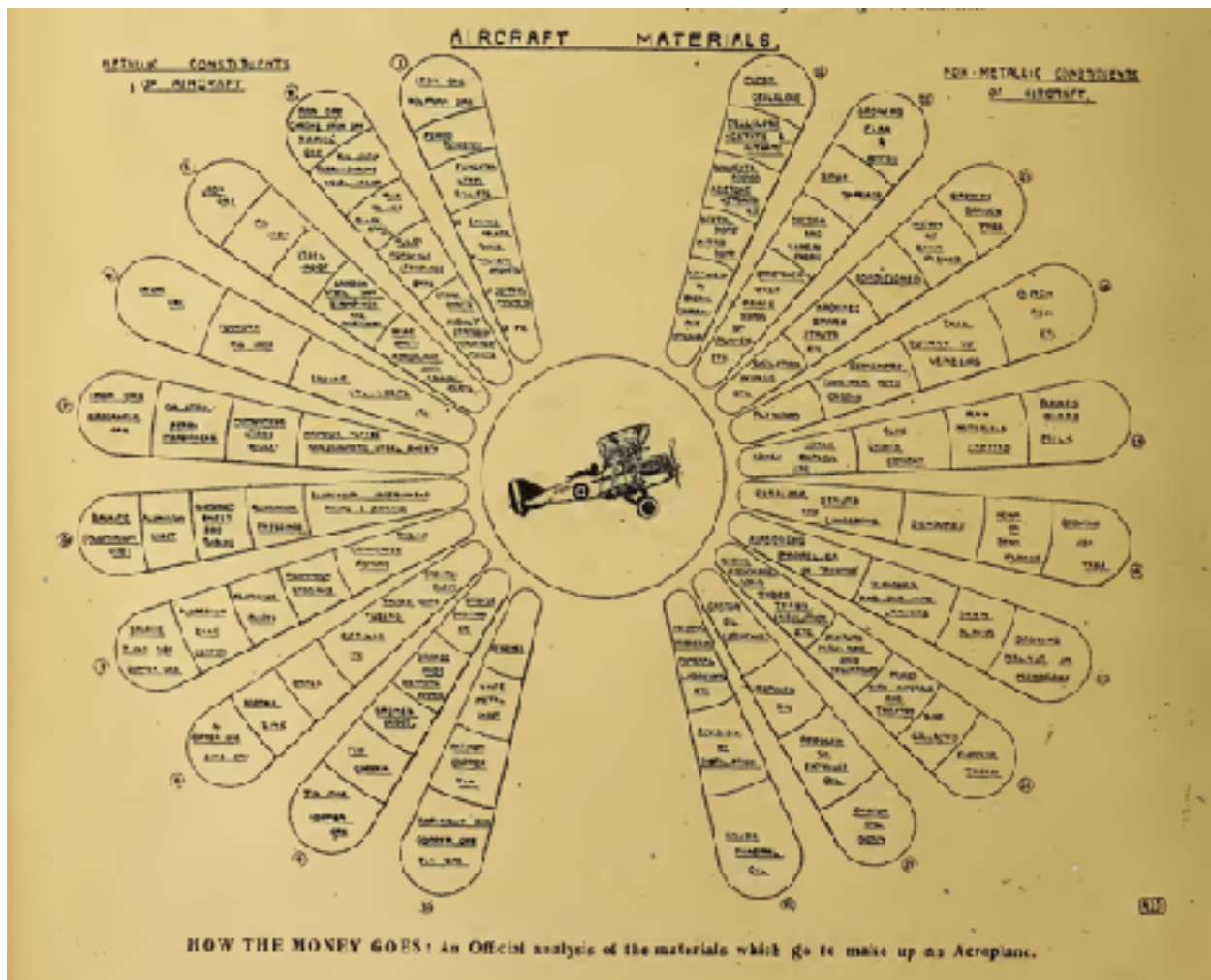
The various Aircraft Depots and Aircraft Supply Depots in France number among their personnel some of the cleverest engineers yet produced in connection with aeronautics.

Many of them were professional engineers before the war, though some were not, and they have learned all that is worth knowing about aircraft in the hard school of active-service experience.

At the old R.F.C. Headquarters all the knowledge gained in this way has been collected by a group of singularly competent technical officers, and one is certain that if this knowledge had been properly appreciated and properly used by the people at the Bolo House, the R.F.C. would have been very much better equipped at the end of the war than in fact it was.



## Notes on "Civil Aviation"



The experimental design work also done at Base G.H.Q. has been of high value and would have been of still greater value had the war continued .

“one rather gathers that, when some of these machines were put out to sub-contract, the originally delicate fittings designed and used satisfactorily by the (original) makers became objects of terror to real aeronautical engineers when made by blacksmiths and the like.”

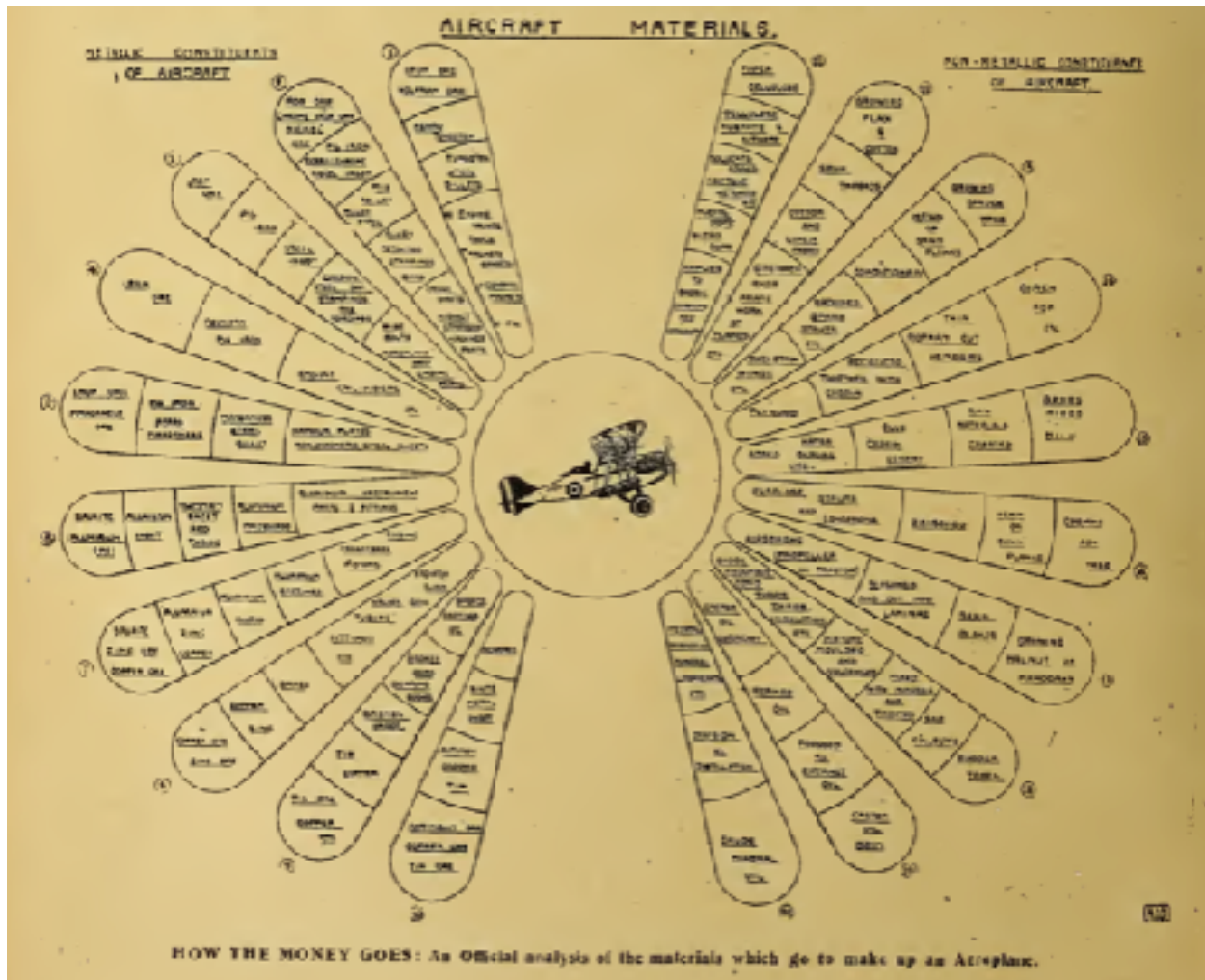
15 January 1919 - Aeroplane - The Development of Commercial Aviation by CG Grey

Consideration of the future development of Commercial Aviation naturally leads us along certain main lines of thought. First, there is the technical aspect—here we shall pit the brains of our inventors and engineers against those of the whole world, and we have no reason to fear the issue. It is true that in some other lines of inventive work we have left it to others to gather the fruits of our pioneering. In aviation, however, we have gained for ourselves the foremost place in design and technique of aircraft and engines, and British manufacturers may safely be trusted to maintain and improve their position. State assistance in design and research work, it is agreed on all hands, must continue. A policy of “ safety ” must prevail, and the aerial “ Plimsoll ” line and the “ Ai at Lloyd’s ” must brand every British aircraft with the hall-mark of quality and security.

26 March 1919 : Ottawa - AIR SERVICE IN CANADA - MOTION FOR RETURN.

Hon. M-NrT. ANNER removed for a return showing:

1. Whether the Government has divested itself of all aerodromes, airships and air service plant.



2. Also, whether such property is retained by the Government, where it is situated and of what does it consist.
3. Also, is there any air service organization or person in Canada acting under the Government: and if there is:
  - (a) of what persons does it consist;
  - (b) what is the qualification and rank of each person;
  - (c) where are they respectively located;
  - (d) what is each person's duty.

#### The Dangers of Flying.

the risk and danger of flying. This in reality is very much less than is often supposed. The improvements which have taken place in the design and construction of aero planes and engines have brought us to a position in which, with prudence and judgment, the risks of flying are very small, apart from the danger attached to the process of the training of pilots.

a considerable proportion of the accidents which occur are due to higher war training in aerial fighting and close formation flying and to the arduous conditions under which this training is carried out. Even under these conditions fatal accidents have been surprisingly few recently, and the average has now reached the high figure of 1,170 hours per fatal casualty.



Some idea of the risks of flying may be gained from the following facts :—Since January, 1916, 3,340 officers have been killed on the Western Front. The strenuous nature of the fighting is well known, and nearly all these have been due to Hattie and only a small proportion to accidental causes. The total flying done during the same period has been close on one million hours, or 114 years.

Legislation and Civil Aviation. all civil flying has been prohibited during the war, and, although fighting has ceased, we are still at war. As Lord Weir announced recently in a public speech, •draft legislation for the governance of civil flying is being prepared and is being pushed on with all speed. But the work and difficulties involved are very great, and it is most important that, even at the expense of a little delay, a really sound position should be arrived at. At the same time the Air Ministry recognise fully the necessity of early action so that the present restrictive orders may be as far as possible removed. Otherwise we might easily find ourselves at a disadvantage as compared with other countries in the early development of civil flying.

It has now been found that this private and domestic legislation depends for its character on the findings of the International Conference, and, to avoid delaying the commencement of private flying in this country, a preliminary set of regulations have been drafted, and it is hoped will come into force during the first few weeks of the new Parliament.

### The Organisation of Aerial Routes.

Dealing next with overland projects, amongst the many branches of the subject, one of the greatest importance will be the selection and equipment of aerial routes. This will be governed partly by geographical and, increasingly, by commercial conditions. Preparations on a large scale and much subsidiary organisation are needed to ensure the success of any chosen route. Landing grounds must be provided, and conspicuous marks and indications given. Repair facilities must be established where skilled personnel is available. The stopping places must be linked up with centres of distribution, of postal and other merchandise and arrangements made for the control of traffic both by day and night.

Here it is that private enterprise will derive the greatest benefit from the work that has been done by the Governments of the countries during the war. The greater part, however, still remains to be done.

### Military Aerial Transport

Quite apart from the numbers of officers who have been transported to France by aeroplane in machines going out as reinforcements, we have established, in the summer of this year, a small organisation called the Air Communication Squadron. It was organised on comprehensive lines and consisted of two flights of D.H.4s, with Rolls-Royce engines, and a few other machines, with a personnel of 61 officers and men. Between August and November there were made no fewer than 279 passenger crosscountry flights, such as to Paris, Nancy, Dunkirk, Manchester, York, and Birmingham, and, I am glad to say, that there has

not been a single case of a crash occurring to any machine with passengers on board. (Applause.) Many very distinguished people were transported, including several members of the British, French, American, and Dominion Governments. One hundred and thirty-one visiting machines.

### The Future of Airships

All that I have said so far has had special reference to heavier-than-air craft, but it may well be that, for commercial purposes, the airship is adapted for long-distance journeys involving nonstop flights. The airship has the inherent advantage over the aeroplane that there is practically no limit whatever to its range provided it can be made large enough.

The large rigid airship is still in an embryonic stage, but sufficient has already been accomplished to show that with increased capacity there is no reason why they should not be built capable of completing the circuit of the globe.

### The Organisation of Commercial Aviation.

I come now to the next great division of the subject of commercial aviation, the organisation and "machinery" which will be so necessary to the successful operation of commercial flying. During the war a great amount of experience has been gained, and though it is true that the conditions of war and peace differ widely, and that the most economical method, may not always have been adopted, certain fundamental conditions have become apparent, which will undoubtedly govern commercial flying in the same manner that they have governed war flying.

It is here that the experience gained by the Royal Air Force will be of inestimable value to commercial aviation. They are, indeed, so far as this country is concerned, the sole experts upon the subject, and their work must form the foundation of commercial aviation practice.

I want to say a few words about the many difficulties which will have to be overcome in fully developing air routes. Firstly, there is the International Conference with regard to aviation about which I have spoken, but even when agreement has been reached, much diplomatic machinery remains to be set in motion before aerial services can be actually started. The Royal Air Force has lately been engaged, for instance, in preparations for a postal service across the North Sea, but in regard to these, as we are still legally in a state of war, there is, for instance, the difficulty of the three-mile territorial water limit, upon which agreement must be reached.

### Aerial Navigation.

Closely connected with the subject of Meteorology is one of equal importance—Aerial Navigation. Here also great progress has been made, especially in navigation in fog and misty weather.

At the commencement of the war the only instruments available for navigation were the compass and map. Since then, compasses have been much improved and many other instruments developed.

The Aerial Navigator has to work under difficult conditions.

He is in a confined space and navigates a craft whose speed is double or treble that of water-craft. In place of tidal currents he has to contend with the winds of anything up to 50 miles per

## Notes on "Civil Aviation"

hour; changing in direction and velocity at different heights, and carrying his craft with them at their own speed and direction. The first step forward was an instrument to determine the angle between the direction in which the machine was pointing and the direction of her path over the ground. That has been solved.

### The Period of Transition.

The period of transition in which aviation in this country, and indeed, all over the world, is at this moment a very difficult one both for those who are waiting impatiently to put into practice their plans for commercial development, and also for those who have held aviation in their grip for the last five years, and who are now about to relax it.

I have also indicated some of the steps that are to be taken to place aviation on a proper commercial basis, and I want to assure you once more that everything possible is being done by the Air Ministry to hasten matters forward and to mature plans for the transition of aviation from a war to a peace basis with the least possible delay and confusion.

May

J'j

in conclusion

. quote a few lines from Adam Smith's

Wealth of Nations," written 100 years ago, which yet bears on our subject as fitly as though it had been written to-day. "The judicious operations of banking, by providing, if I may be allowed so violent a metaphor, a sort of waggon-way through the air enable the country to convert a great part of its highways into good pastures and cornfields, and therein to increase very considerably the annual produce of its land and labour." His metaphor was not so violent after all, and the "waggon-way" through the air is about to be realised.

A number of most interesting views were then thrown on the screen.

### R.A.F. CADETS.

With reference to the notice published last week concerning demobilised Cadets of the Royal Air Force being permitted to extend their service, as misapprehensions may arise it is pointed out that such Cadets can only "extend their service as ordinary airmen and not as Cadets

two R.A.F. officers in reaching the unprecedented height of 30,500 feet on a D.H.9 machine proves yet again the remarkable lifting power, climb and endurance of Airco Machines.

Known as the D.H. or Airco 9, this machine was designed by Capt. Geoffrey de Havilland, Technical Director of the Aircraft Co., and is fitted with a "Napier" Lion Engine.

### Engineers and Demobilisation.

The following letter has been received from the Secretary of the Crystal Palace Old Students Society :

—

28, Victoria Street, Westminster, S.W.

## Notes on "Civil Aviation"

Dear Sir,—At the present time a very large number of engineers who formerly held good appointments are looking forward with some anxiety to the time when they will leave the Army, Navy, or Royal Air Force and have to find positions in civil life. Similarly, in view of the great work of reconstruction, employers must know that sooner or later they will be needing competent men, and may have some difficulty in finding them.

I should esteem it a very great favour if you would publish this letter, the abject of which is to call together old students of the Crystal Palace Engineering School for co-operation in dealing with the problems of demobilisation as affecting engineers. Over 2,000 engineers have passed through this school, the addresses of many are unknown to me, and they include many men holding the highest positions- in the profession. The Council of the Crystal Palace Old Students Society feel that they can do good work in this respect, not only among their own members, but for many others.

May I therefore ask you to insert this letter as an appeal to all old students of the Crystal Palace Engineering School or others interested in the subject to communicate with me by letter.

I would add that this is not an ordinary employment bureau, and that no fees of any kind are to be charged.

I am, yours very truly,

H. C. H. Shenton (p.p. E .

) , Hon. Secretary.

May 07 1919 - Aeroplane CG Grey - ON MATTERS ACTUAL, AL,  
By Captain P. A. Barron (late R.A.F.).

### The subject of Aviation Insurance

#### A Very Unprofitable Crash.

This means, one presumes, that if an insured machine crashed after the completion of 600 flying hours the owner would be entitled to nothing whatever.

To put the proposition in another way, if the machine were to fly two hours each day (excluding Sundays) its value would be regarded as nil at the end of a year.

Now, as machines and engines are at the present time, it would be quite impossible to keep an aeroplane in commission for one year without renewing a great many parts. In the case of the engine a large number of the wearing parts such as valves and valve operating gear, bushes, pistons and rings would have been replaced many times over before the year had expired. The aeroplane would in all probability consist of only a small proportion of its original parts and the remainder would be new. If it had received proper attention throughout the year it should be as airworthy at the end of the twelve months as it was at the beginning.

The system, therefore, of depreciating its value solely in accordance with the number of hours flown strikes one as absurd.

#### Nothing left of the Machine except the Number.

One may with advantage consider the methods employed in the R.A.F. A machine was taken over from the manufacturers and allotted a certain number. In course of time it might be fitted with a new engine, new planes, a complete undercarriage, and possibly the fuselage might be entirely re-built. Thus practically nothing of the original machine would be left except the number, and that might be painted on a new rudder. But it would be absurd to say that the machine was less airworthy at the end of its service. It was equally safe, and, providing that the replacements had been made efficiently, it should have had an equal insurable value throughout its life.

Now when we consider the problem of aircraft insurance one fails to see why one should assume that commercial firms will not apply the same methods, in this respect, as those of the R.A.F.

One presumes that they will not be allowed to fly machines that are not airworthy, as one has been assured that aircraft will be inspected daily by licensed ground engineers.

Some Entirely New Problems.

## Notes on "Civil Aviation"

The particular point one wishes to drive home is that in the insurance of aircraft one cannot be guided entirely by analogies. Aeronautical actuaries (may one call them Actuaerial experts?) have entirely new problems to solve. They should realise that the number of hours during which a machine has flown is not the chief factor that should determine the premium. Airworthiness is the premier consideration.

In the Air Navigation Acts, 1911-1919, Directions issued by the Secretary of State for Air under para. 3 (2) of the Air Navigation Regulations, 1919, dated April 30th, 1919, one finds the following :—

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"8. Aircraft certified daily by such Licensed Ground Engineers will be periodically re-inspected by a person or persons duly authorised by the Secretary of State, who reserves the right to suspend or revoke licences granted as above, should such certified aircraft be deemed by him as a result of such examination to be unsafe.

"9. Ground Engineers certifying flying machines or engines as airworthy after overhaul, must be in a position to certify that all the conditions required for the inspection of subsequent aircraft during construction that apply to the overhaul have been carried out.

The Secretary of State reserves the right to suspend or revoke the licence of the Ground Engineer responsible for certifying that the overhaul has been correctly carried out, should a test inspection be deemed by the former to indicate that the flying machine is not airworthy."

A Suggestion.

One would, therefore, suggest that in the present darkness of our inexperience insurance policies should be issued for short periods, for example, three months, and should be renewable for similar periods at perhaps a slightly higher premium, so long as it can be shown that the official inspections prove the machines to be airworthy, and that replacement have been made as required.

Tuesday, April 29, 1919. - ottawa : CONTROL OF AERONAUTICS.

Hon. A. K. MACLEAN (for the Minister of Naval Service) moved for leave to introduce Bill No. 80, to authorize the appointment of an Air Board for the control of aeronautics.

He said: Mr. Speaker, I might very briefly give to the House the chief features of this Bill on its first reading. It will be necessary owing to the development of aeronautics in Canada and in other countries that there be appointed a body to administer this service in this country. The Bill proposes the establishment of an Air Board (?) consist of not less than five and not more than seven members to be appointed by the Governor in Council. It is intended -that the Chairman shall be a minister of the Crown and that the Department of Militia and, the Department of Naval Service shall each be represented on the Board, by one member. The duties of the Air Board will be:

- (a) To supervise all matters connected with aeronautics;
- (b) to study the development of aeronautics in Canada and in other countries, and to undertake such technical research as may be requisite for the development of aeronautics ; and, to co-operate with other institutions in carrying out such research;
- (c) to construct and maintain all Government aerodromes and air stations, including all plant, machinery and buildings necessary for their efficient equipment and upkeep;
- (d) to control and manage all aircraft and

equipment necessary for the conduct of any of His Majesty's services;

(e) to operate such services as the Governor in Council may approve;

(f) to prescribe aerial routes;

(g) to co-operate with other officers of His

Majesty and to assist in the carrying out of any services under their jurisdiction which may require

aerial work of any nature, and to collaborate

with the officers employed in existing

air services of His Majesty in such extension of

their present work as the development of aeronautics may require;

(h) to take such action as may be necessary

to secure by International Regulation or otherwise,

the rights of His Majesty in respect of

His Government in Canada in International Air

Routes ;

(I) to co-operate with the officers of the Departments of Militia and Defence and of the

Naval Service on all questions relating to the

air defence of Canada;

(j) to co-operate with the air staffs or

authorities of other Governments or countries

for any purposes pertaining to air services;

(k) to investigate, examine and report on all

proposals for the institution of commercial air

services within or partly within Canada, or the

limits of the territorial waters of Canada;

(l) to consider, draft and prepare for approval

by the Governor in Council such regulations

as may be considered necessary for the

control or operation of aeronautics in Canada

or within the limits of the territorial waters of

Canada; and,

(m) to perform such other duties as the

Governor in Council may from time to time impose.

It is also intended to give to the board

power subject to approval by the Governor

in Council:

To regulate and control aerial navigation

over Canada, and the territorial waters of

Canada, and in particular, but not to restrict the generality of the foregoing terms of this

section, it may with the approval aforesaid,

make regulations with respect to-

(a) licensing pilots and other persons engaged

in the navigation of aircraft and the

suspension and revocation of such licenses;

(b) the registration, identification, inspection,

certification and licensing of all aircraft;

(c) the licensing, inspection and regulation

of all aerodromes and air-stations;

(d) the conditions under which aircraft may

be used for carrying goods, mails and passengers,

or for the operation of any commercial

service whatsoever, and the licensing of any

such services;

(e) the conditions under which goods, mails

and passengers may be imported and exported

in aircraft into or from Canada or within the

limits of the territorial waters of Canada or

may be transported over any part of such

territory;

(f) the prohibition of navigation of aircraft

over such areas as may be prescribed, either

at all times or at such times or on such occasions,

only as may be specified in the regulations,

and either absolutely or subject to such

exceptions or conditions as may be so specified;

(g) the areas within which aircraft coming from any places outside of Canada are to land, and the conditions to be complied with by any such aircraft.

The purpose of the Bill as I have said is to control and regulate and to prescribe laws for the conduct of aeronautics in Canada. It is deemed advisable to constitute a board for the time being as the most practicable method of dealing with this new subject. Possibly after a year's trial of the proposed legislation it may be found that some other legislation may be considered necessary.  
Motion agreed to and Bill read the first time.

01 May 1919 The United States is represented at the peace conference<sup>139</sup> by Brig.-Gen Benjamin D. Foulais, Major Pollock & Captain Bacon. The proposed convention on international aerial navigation is completed by the Judicial and Military committees of the aeronautic commission of peace. composed of 41 articles. "The duty of the International commission on aerial navigation is to be formed - its' duties: to gather and disseminate radio-telegraphie, meteorological and medical information,

05 May 1919 :

CIVIL SERVICE APPC>INTMENTS.

'Mr. 'McCURDY:

1. Is it the present practice of the Civil Service Commission in making appointments to the Civil Service to stipulate that all appointments shall be considered as temporary until the period of demobilization shall have passed?
2. If not, is it the intention of the Government to prevent further permanent appointments until demobilization has been completed?
3. If not, what steps has the Government taken to insure that men yet on active service shall enjoy an equal opportunity to compete for these positions?

Hon. Mr. BURRELL:

1. No. All appointments of a permanent character are made from eligible lists of candidates who have passed prescribed examinations or have been successful in open competition after public advertisement. In both cases returned soldiers are required to possess only the minimum of qualifications when they take precedence over all civilians no matter how highly qualified. Permanent appointments are not made except on specific request from the department.
2. Until demobilization has been completed, it is not the desire of the Government that permanent appointments to the Civil Service should be made except in those cases where it is necessary in the public interest.

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<sup>139</sup> [https://archive.org/stream/Aviation\\_Week\\_1919-05-01#page/n15/mode/1up](https://archive.org/stream/Aviation_Week_1919-05-01#page/n15/mode/1up)

3. Answered by No. 2.

ADVERTISING OF CIVIL SERVICE

VACANCIES.

Mr. POWELL:

1. By what means are vacancies in the Civil Service of Canada advertised?

2. Does the Civil Service Commission always advertise in the newspapers?

3. If not, under what circumstances are such advertisements published?

4. If so, what newspapers are authorized and paid by the department for such publications?

Hon. Mr. BURRELL:

1. The columns of the Canada Gazette, a mailing list of all persons known to the commission as likely to be interested, posters sent places of public resort, such as post offices, banks, libraries, colleges, universities, offices of the Great War Veterans' Association and its branches, and, in

a few special cases, by newspapers. 2. No.

3. In the case of certain local positions, when a small advertisement in the local press seems to be the only means of bringing the notice of the vacancy to knowledge of persons interested, or when the other means of publicity have failed to secure a suitable applicant for a local position.

4. None. The paper, or papers, with the largest circulation in the particular centres where the vacancies occur are chosen in each case.

CONTROL OF AERONAUTICS-APPOINTMENT OF AIR BOARD.

On the motion of Hon. A. K. Maclean  
Bill No. 80 to authorize the appointment  
of an Air Board for the control of Aeronautics  
was read the second time and the  
House went into Committee on the Bill,  
Mr. Boivin in the Chair.

On section 1-Short title:

Mr. BELAND: Has the minister given a  
general explanation of this Bill?

Mr. A. K. MACLEAN: I really cannot  
say anything more than is stated in the  
Bill which I explained briefly on its first  
reading. Obviously there must be some development  
in commercial aeronautics in the  
immediate future. During the war the development  
in aeronautics related almost entirely  
to military and naval affairs. Private  
and commercial aeronautics was prohibited  
altogether and consequently there  
was no development along these lines. It  
is necessary, in view of the probable development  
of aeronautics, that there should  
be some governmental control of such matters  
and it is proposed to establish a Board  
which shall have entire control of any Government



or commercial service. If my hon. friend will look at section 3 he will see there set forth the duties of the Board which will cover fully, I think, all the probable activities in aeronautics. Section 4 is the other important clause and that empowers the Air Board to establish regulations for the control of aeronautics.

Section agreed to.

On section 2--Air Board; chairman and vice-chairman; representatives of Militia and Defence and Naval Service Departments; term of office; salaries.

Mr. A. K. MACLEAN: It is not proposed to establish another department to administer this Act. I would suppose that most of the members of the Board would be selected from established departments of the Government. The administration of the Act will be largely in the hands of the vice-chairman of the Board who will be the chief executive officer. It is necessary, of course, to have representatives of the Naval and Militia Departments upon the Board for the reason that heretofore they have been very much and practically interested in aeronautics. Consequently it is proposed that they shall have direct representation on the Board. It might be urged that the Post Office Department, the Interior Department, the Dominion Police and some other departments should be represented on the Board. However, there was a reason at the moment existing for the representation of the two departments I have mentioned and it is not deemed advisable that other departments which may possibly be interested in aeronautics in the future should all be represented on the Board. But, it will be understood that this measure is of a temporary nature. I have no doubt that in the working of it during the coming year weaknesses will develop but experience will enable us to pass legislation which will be more satisfactory.

Mr. MORPHY: I have listened to the statement of the minister and I would judge from it that his intention is to set up a theoretical Board rather than a practical one. Otherwise, he would have stated the fact that we have a large number of the finest Canadians who have ever done service for their country many of whom have returned to Canada after real practical service on the battlefields of Europe. While there may be men who have been employed with the military and naval services in Canada this is a very opportune time of recognizing

the boys who have been fighting for their country, and doing good practical work, and of calling to the service of the country some of these young men who fought for it. I will leave that with the minister. I think that there should be some recognition given to these boys who have done their duty overseas.

Mr. A. K. MACLEAN: Doubtless the committee which my hon. friend refers to will be represented on the Board.

Mr. OOPP: Has there been any consideration given to the question as to the salaries that will be paid as to those who serve on this Board?

Mr. A. K. MACLEAN: No consideration so far has been given to the matter. It is impossible to give any information to my hon. friend which will be at all reliable at the moment. Possibly the chief executive of the Board will be one who is now employed in some department of the Government. The other members may possibly serve without pay. The development will be largely commercial and perhaps it will not be very extensive for a time. I am hopeful that all the members of the Board will not be paid.

Mr. OOPP: Is any provision being made in the Estimates this year for this service?

Mr. A. K. MACLEAN: There will be in the Supplementary Estimates.

Mr. OOPP: You could give us some idea from that.

Mr. A. K. MACLEAN: The Committee will have some idea of the probable expense when the Supplementary Estimates are brought down.

Mr. STEVENS: Will the minister kindly state if it is in the mind of the Government that this Board shall at an early date undertake the commercial development of aeronautics, not with the idea, that it is to be merely an adjunct of military and naval development but with the idea of taking up definitely the commercial development?

Mr. A. K. MACLEAN: If my hon. friend is inquiring whether the Government intends entering into the field of commercial aeronautics, I am bound to reply that it has not yet considered the matter from that aspect. The operations under the Act will, of course, largely relate to commercial activities; I would expect that for the next few years, at least naval and military activities in aeronautics will be very limited, indeed.

Mr. J. H. SINCLAIR: I do not think the minister has given the Committee very much information as to the functions which this board is to perform. I have not got any clear idea as to whether it is simply to manage aeronautics in connection with private enterprise, or whether it is to embark upon some large scheme of civil aviation.

The CHAIRMAN: The remarks of the hon. member will be in order when we take up the next clause.

Mr. CAHILL: Has the Government any idea with respect to its future policy on the subject of aeronautics?

The CHAIRMAN:—The remarks of the hon. member will be more in order when we take up clause 3.

Mr. McKENZIE: Before we pass this clause I would like to ask if the operations of the board to be created under this Bill are to be centered at Ottawa?

Mr. A. K. McCLEAN: Yes.

Mr. McKENZIE: It will be an organized body under the supervision and control of some department of the Government?

Mr. A. K. McCLEAN: Yes.

Mr. McKENZIE: Is it intended, in connection with the operations of this board, to establish an institution or school where practical and theoretical instruction in aeronautics will be imparted so as to render a man thoroughly competent to take charge of an aeroplane?

Mr. A. K. McCLEAN: Up to the present moment it is not the fixed or settled policy of the Government to establish a school for the purpose indicated. Speaking generally, the Government has no settled policy in respect to aeronautics. The Militia and Naval Departments, during the period of the war, carried out a programme, but it has now practically ceased. It was necessary to first enact legislation before any fixed policy could be adopted by the Government in respect of any form of aeronautical activity. Many applications have been received from commercial companies for the establishment of aeronautical routes throughout Canada; and, as I said a moment ago, it is open to the Government to embark upon various forms of aerial activities, such as the conveyance of the mails, the survey of forest, fire protection, patrols by the mounted police, and so forth, but at the present time, the Government has reached no definite policy in

respect of any of these matters.

Mr. McKENZIE: What will be the real function of this board after it has been organized? What will it start out to do?

Mr. A. K. MACLEAN: The immediate purpose of this legislation is chiefly to control aeronautics in Canada, established by any Government department or by private corporation. For example, it is not within the right of any individual to fly in the air with aeroplanes or hydroplanes, or any other machine of the kind, although there is no statutory law which directly prohibits it.

Mr. McKENZIE: It is entirely unknown to the common law.

Mr. A. K. MACLEAN: It is unknown to both the common law and the statute law. Consequently, nobody can legally engage in flying to-day, and in none of the provinces, nor in Canada, is there any statutory authority for any body to grant licenses for the purpose. This board must establish aerial routes, or to put it in another way: If a commercial company desires to carry on an aerial service between, say, Montreal and Toronto, their route should be first established and that would be one of the functions of the board. The machines used should be licensed and inspected just as a steamer is. The pilots and the crews must also be licensed, and that will be another function of the board. Furthermore, regulations must be enacted, compelling flying machines to use telephonic or wireless apparatus, and in relation to many other matters which do not occur to my mind at the present moment. I think a very close parallel to the control of aerial navigation is the control which we exercise over shipping, with, of course, the very notable difference that one operates on water and the other in the air. Generally speaking, the object of the legislation is to put ourselves in a position to control aeronautics, chiefly commercial, as that is the form we shall likely have in the immediate future in Canada.

Mr. ERNEST LAPOINTE: By this Bill, according to the minister, Parliament is establishing its authority over aerial routes and all matters concerning air craft. But does my hon. friend think that if a company, for instance, established a line between Montreal and Quebec, to operate exclusively within the limits of that province, it would be a provincial matter, and that the company in question should not come under the authority of this Parliament unless

its undertaking is declared to be for the general advantage of Canada? My hon. friend classifies aerial navigation with marine navigation, but article 92 of the British North America Act declares that a provincial legislature may exclusively make laws in relation to the matters coming within the class of subjects "hereinafter enumerated," and article 10 of section 92 sets forth: Local works and undertakings other than such as are of the following classes—  
Lines of Steam or other Ships, Railways, Canals, Telegraphs and other Works and Undertakings, connecting the Province with any other or others of the Provinces, or extending beyond the limits of the Province.

Therefore if such a company were operating exclusively within the limits of one province it would be a provincial matter, and I do not think this air board could fix the route, or control the license to pilots, and other matters in connection with it.  
Mr. A. K. MACLEAN: The constitutional question, of course, arises in connection with this matter, and had it been pointed out to the Fathers of Confederation that we might possibly have this aerial development in later years, it would be difficult now to say whether it would have been placed in clause 91 or 92 of the British North America Act.

Clearly, the legislation, if enacted, would cover interprovincial aeronautics, and consequently to that extent the Federal Government would have control. Whether it has control over purely provincial aeronautics is a question open to very much doubt, and possibly it will have to be settled ultimately by the courts. There is a clause in the British North America Act which in effect states that subjects not assigned to the provinces fall within Federal jurisdiction. Aeronautics were not placed in the list of subjects assigned to provincial jurisdiction, and therefore it is arguable, that the subject falls within Federal jurisdiction. However, any doubt we may entertain, on the point does not affect the competency of Parliament to pass this legislation, although later it may be held by the courts that it is only *intra vires* in so far as it affects interprovincial aeronautics.

Mr. LEMIEUX: I do not know if this development of transportation was known before Confederation, but two of the greatest poets of the 19th century, Lamartine and Tennyson, predicted that some day we would see argosies floating in the fair blue sky.

Mr. A. K. MACLEAN: And Jules Verne

also.

Mr. LEMIEUX: Yes. I think the objection of my hon. friend from Kainouraska (Mr. Lapointe) was well taken. It seems to me that as the Government is so anxious to have Government ownership of all kinds of transportation, it should not lose this favourable opportunity of furthering that project. There is no incubus attached to aerial as there is to railway transportation, and the Government should take control of this new industry, which, no doubt will develop to a very great extent in the near future. The British Government have already organized an aerial postal service and have mapped out three routes, one for freight, another for passengers, and a third for some public service, I think the postal service. The United States also have organized a postal service between Philadelphia, Washington and Baltimore.

Mr. ROWELL: And New York.

Mr. LEMIEUX: This may be only a tentative service-

Mr. A. K. McLEAN: I think it is experimental.

Mr. LEMIEUX: That is what I mean.

But it seems to me that the Government should take into serious consideration the propriety of experimenting in this matter. Perhaps we would save enormous railway subsidies by organizing an aerial postal service. I regret sincerely that the Government did not take over the magnificent plant which the Imperial Munitions Board erected at Camp Borden during the war. Unfortunately the whole plant was sold to an enterprising Yankee, and Canada lost thereby an excellent opportunity. If it is not too late, I would urge upon the Government the necessity of taking over that plant and giving Canada the benefit of it. We do not lack enterprise in aeronautics. During the war our young men showed that they were equal to the best among the Allies in that particular sphere. I need name only one of them who is world famous-Bishop. We have not only the men, but we have all the elements that constitute the material part of the industry itself. During the war the Imperial Munitions Board found in British Columbia the timber which was hewn for the construction of aeroplanes, and I understand they went even as far as to subsidize very heavily a branch line several miles in length in order to tap the district where that special timber was obtainable in large quantities. It seems to me that the Government should

be extremely careful in its legislation,-- more careful than it appears to have been in the present instance, -- --o as to this industry in the right way.

The CHAIRMAN: Before I permit any more speeches on the principle of the Bill, I must ask whether it is the unanimous consent of the Committee that the principle of the Bill be discussed at this time. If not, I shall have to call the Committee to order. I called an hon. member to order a moment ago on this ground. I did not want to interrupt the hon. member (Mr. Lemieux) but the rules of the Committee are not being followed, and this accounts in great measure for the length of the session. Is it the pleasure of the Committee that the principle of the Bill be now discussed? Some hon. MEMBERS: No.

Mr. CAHILL: Will this board be empowered to grant licenses to any persons who wish to establish lines between Ottawa and Toronto, or between other points? Mr. A. K. MACLEAN: Yes.

Mr. CAHILL: If a company which established a line between Ottawa and Toronto wanted to establish a line also between Ottawa and Montreal they might ignore the specified landing places around Ottawa and lease for a trifling sum landing rights on any field within a reasonable distance of the city. Would it be within the power of this board to say that no company should have exclusive right to own territory for landing purposes? Airmen are now ready to leave Newfoundland for England; they have all decided to start at about the same place. It is possible that Prince Edward Island would be a very satisfactory landing place--perhaps more satisfactory, on account of the absence of fog, than any other part of the eastern coast. Some company, if you gave them a franchise, might go in there and blanket the whole island for a trifling sum, obtaining exclusive right to land there. Is it intended to give these companies any such exclusive franchise as was given to the Bell Telephone Company in the early days, when it was thought that no one else would be in a position to compete with them? Before this board is established, before they take power to tie the country up to anything, it would be well for the Government to have a well-defined policy in this matter; it would be well for them not to go too fast until they know what the outcome is likely to be.

Mr. A. K. MACLEAN: The only thing I

can say in reply to my hon. friend is that the Government have not in mind the granting of exclusive privileges in respect of certain routes to any individual or company which may be organized. But we must be guided largely by experience in this matter. While at the moment it may seem undesirable to grant exclusive privileges to any person or persons, still a limitation of licenses granted to individuals along certain routes may be necessary. It might, for instance, be perfectly proper to grant a license to twelve or twenty-four persons to fly between Ottawa and Toronto, but, in the light of experience, it might be considered improper, possibly dangerous, to grant licenses to several hundreds or several thousands. As I have already indicated, the policy of the Government in this matter is not yet fully considered or matured. We shall be guided very largely by efforts which are made to develop aeronautics commercially by individuals or corporations. My hon. friend might suggest the propriety of our establishing a mail service between Nova Scotia and New Brunswick and Prince Edward Island. That might strike one as a very desirable place to experiment in aerial mail service. I should not like to speak for the Government at the moment and say that they propose establishing such a mail service, but naturally, in the course of time, the Government must develop a policy in respect to these matters. If there is great activity on the part of private interests and private capital, it might be well to allow such interests to do a great deal of experimenting.

Section agreed to.

On section 3-duties of Air Board:

Major-General MEWBURN: I was glad to hear the remarks of the member for Maisonneuve (Mr. Lemieux) with regard to our taking over some of the property at Camp Borden. The Imperial Munitions Board spent a large amount of money in Canada in connection with the Royal Air Force. They had a school of aerial gunnery at Beamsville, on Lake Ontario, which we did not consider it advisable to touch. They also had large buildings at Deseronto and large aerodromes and plant at Camp Borden where they spent millions of dollars. When the armistice was signed I immediately took the matter up with the Imperial Munitions Board and all that plant and machinery was transferred to the Militia Department. It was difficult for us to determine from a military standpoint what should be done



as regards the air force. I realize what wonderful work the Canadiens did in the Royal Air Force, and while it seemed to me that we could not utilize that force in Canada for training purposes, I thought it my duty to protect, as well as possible, their property and equipment. Therefore, the buildings and all the equipment there were handed over to the Government for a mere song, and they are on our own training-ground, Camp Borden, which is recognized as one of the best training grounds on the North American continent and which has been used for training American fliers. We also had handed over to us, free of cost, a large number of airships and also a quantity of maps and so forth, and we have retained a very small staff there to protect them. Some of the buildings we expect to utilize as hospitals, thus saving the erection of hospitals. At Long Branch, on Lake Ontario, where the rifle ranges are, the Imperial Munitions Board erected a number of buildings which have been handed over to us, but other properties which were on leased ground were scrapped. All the property I have mentioned is intact, and we have the facilities for continuing training and developing an air force in the future. When my Estimates were being discussed the other night, I was discussing the reorganization of the militia, and if we have to reorganize the militia for defence and other purposes, no doubt an air force will form part of it. That, however, was one of the subjects that we decided the commission would deal with, and as regards the Air Board, I sincerely trust the magnificent men who have made such a name for Canada in the air will have the first opportunity of being recognized in this. Many of them are coming back and are now talking of the commercial side of the industry which is being developed in England. We have a large quantity of information both from France and England as regards air forces, and I sincerely trust that our men who have made good in the air from a military standpoint will be able to make a success in the air from a commercial standpoint.

Mr. LEMIEUX: Were there any Canadians associated with the American who bought the whole of the aerial property in Toronto?

Major-General MEWBURN: I do not know that there were. Colonel Bishop told me that he expected to be interested in some British machines for which he was

offered the agency. and while hie had not worked out just what he was going ta do, he hoped ta be able ta deveiop in this country same commercial enterprise, possibi y in canjunction with the postal service.

This Air Board is oniy a temporary one ta study the question, and the Department ai the Naval Service is represented on At merely ta keep in touch with a view ai developing something in the future.

Mr. LEMIEUX: I canna t agree with Shakespeare's lines: What's in a nanie? I wouid sug-gest that the minister have Coi. Bishop on the first aerial board in Canada.

Mr. MIDDLEBRO: I shoud like very strongly ta second the suggestion ai the hon. member. Col. Bishop is a native ai my tawn and is a son ai my former legai partner. I have known him from the day he was born ta the present time, and hie is to-day the world's champion living airman, having brought dawn seventy-two aerapianes. He is a boy ai whomn any country niight be praud, apart aitgether from his ability and record as an airman. I wauid respectfully suggest that anything that can be done by the nlinister ta secure his services an this Air Board wouid be one ai the best moves the Minister ai Militia could make I understand he served for a time an the Administration Board in connection with the air service in London, England, and wouid he admirabi y qualified for the position, though I do flot know if he wouid accept it at the present time.

Major-General MEWBURN: I do not think any saia y the Militia Department could affer Coi. Bishop wouid induce hΦm ta take such a position. I have had many consultations with him, but at the present time he is making something like \$30,000 a month under contract in the United State-.

Mr. LEMIEUX: I am sorry, because I wouid like ta see a " bishop"- associated with the present Government.

Mr. COPF: Under -subciause (b) of section 3 this Air Board can travel throughout the whole country studying this question, wΦthout let or hindrance on the part of any one.

They may go even into other countries, as they see fit. Under subciause (c), they have power to construct and maintain al Government aerodromes and air stations, including ail plants, machinery and buildings necessary for their efficient equipment and upkeep. in these two clauses, the approvai ai the Governor in Council is apparently not necessary, and I shauid like to know whether or nat it is

the intention of the Government to give such wide powers to this Aerial Board.

Mr. A. K. MACLEAN: The purport of subclause (b) of section 3 is merely a direction to the Air Board to take cognizance of and to study aeronautical development in all countries of the world. It does not imply that the board is to travel as a body to do research work in connection with this matter. It might conceivably at same time be desirable for a member of the board to visit some countries to study the development there taking place, but I do not anticipate that much in the way of travelling will be done by members of the board for a considerable time. I think, however, it is a very proper provision that members of the board be directed to study the development of aeronautics in all countries in the world. Section 7 says that all the moneys proposed to be expended under this Bill must be voted by Parliament, so that Parliament will have control over the matter.

The purport of subclause (c) is to place in the hands of the Air Board the absolute control of the construction and operation of any air service owned by the Government.

If the Post Office Department should decide to establish a service between Halifax and Newfoundland, or Halifax and Charlottetown or Halifax and St. John the control of the service would be in the hands of this Board. The Board will also control any services which originate in either the Naval Department or the Militia Department, and this clause places in the hands of one body all matters relating to aeronautics. I trust that this will commend itself to the judgment of my hon. friend. For the time being it seems the best thing to do.

D and E are similar in character to C: it simply gives the Board the control and management of all aircraft and equipment necessary for the conduct of any of His Majesty's services. Possibly the Government may establish other services of its own, but in any event, such services when once established, and so long as this legislation stands upon the statute books, will be under the control of the Air Board.

Mr. COPP: I would not like my hon. friend to think that I am raising any objection to the passage of the Bill. My only object is to get some information in regard to it. The minister suggested that the possibility in the near future of a postal air service between Prince Edward Island and the mainland. Suppose a private individual

started such a service, would this Board have the right to designate the landing places on the island and on the mainland and undertake the expenditure of public money in regard thereto?

Mr. A. K. MACLEAN: If it were a Government service, yes; and if it were a private service, still in some respects the Air Board would have control. For instance, it might very properly designate the route to be followed by the service, and should certainly have the right of licensing machines and naming the landing places. In the case of a private concern, the Government, of course, would not expend any money in securing the landing places; that would be done by the companies. There is in contemplation the organization of private corporations which will shortly approach the Government for subsidies for the carrying on of a mail service between different points in Canada. It was necessary that we should have this legislation in order that private companies might be in a position to approach the Government for assistance to carry on public services or to conduct any form of commercial aeronautics themselves.

Mr. COPP: I quite agree with the minister that such legislation should be passed at this session. Aeronautics are only in the experimental stage and it is but right that opportunities should be given to develop this service if it becomes of commercial value to the country. I would suggest, however, that we surround it with adequate safeguards, particularly in connection with the expenditure of moneys. I fear that if money is expended without the approval of the Governor in Council a very much larger expenditure will be incurred than the Government or this Committee foresees at this moment.

Mr. A. K. MACLEAN: The Governor in Council will exercise a very critical control of expenditures. Clause 7 of the Bill reads:.,  
All salaries mentioned herein and ail expenses  
incurred under the provisions of this  
Act shall be paid out of such money as may  
be appropriated by Parliament therefor.

The authority of Parliament must therefore be obtained before any money can be expended.

Mr. LEMIEUX: If it is good in this case, why not in the railway case? My hon. friend says that companies are already petitioning the Government to establish aerial mail services, and he gives us a gentle hint that the Government may favourably consider the request made by these companies. He has mentioned possible routes  
-Halifax and Sydney-

Mr. A. K. MACLEAN: The Magdalen Islands.

Mr. LEMIEUX: My 'hon. friend has struck the nail on the head. The Magdalen Islands are the only group of islands inaccessible during several months of the year.

Navigation closes at the beginning of January and is hardly open on the first of May, and it would be highly beneficial if a mail service could be carried on during the winter months between, say, Pictou and Prince Edward Island, and the Magdalen Islands.

Mr. A. K. MACLEAN: I have no doubt that mail will receive the attention of the Air Board. They would have to study very carefully the atmospheric conditions, the effect of altitudes, etc., before it could be definitely decided how practical these questions are. But when one is thinking of the practical uses to which aeronautics may be applied in Canada in public services, one immediately thinks of Newfoundland, Prince Edward Island, the Magdalen Islands, the Yukon Territory, across lake Superior, James Bay and many other routes.

Mr. LEMIEUX: And the cruising of our forests.

Mr. A. K. MACLEAN: Yes, the cruising of our forests.

Mr. LEMIEUX: The Conservation Commission is very anxious that such a service should be established, and I note with pleasure that the province of Quebec has secured two aeroplanes to cruise the forests there.

Major-General MEWBURN: They can also be used for photographic purposes in the making of surveys.

Mr. LEMIEUX: Yes. The great enemy at present is fire, and according to statistics published lately the losses are colossal. I see in the establishment of an aerial service a great boon for Canada not only in the matter of defence but commercially and industrially.

Mr. J. H. SINCLAIR: I see in the American papers that the United States Government have been experimenting in the locating of schools of mackerel by aeroplane. Possibly aeroplanes might be useful in that direction.

Mr. A. K. MACLEAN: I have seen that in the papers but I do not think that any experiments in that direction have been really made. I know of something analogous to that, though. The seal fishermen in Newfoundland were endeavouring some

months ago to secure the services of an aviator-I do not know whether they succeeded or not-to fly out over the ice floes to ascertain the location of the seals and the openings for sealing vessels and steamers. That is easy of accomplishment if atmospheric conditions permit.

Mr. J. H. SINCLAIR: You can see deeper into the water from above, and schools of mackerel can be located in that way. By this section the Departments of Militia and Naval Affairs are associated with this Board. Which department will it come under?

Mr. A. K. MACLEAN: Both.

Mr. J. H. SINCLAIR: What minister will be responsible for the administration of this board?

Major-General MEWBURN: That is not settled. There will be a representative of the Militia Department on the board.

Mr. ALFRED THOMPSON: Is the minister in a position to make a statement as to what development has occurred in regard to coastal patrol by seaplanes which will operate under this board? Some time ago

I took the opportunity of expressing some ideas I had in regard to the development of the hinterland of Canada by the use of aeroplanes,

and I am delighted now that this minister has brought in this Bill. I feel, with the hon. member for Maisonneuve (Mr. Lemieux), and other hon. gentlemen who have spoken, that we are on the eve of great events in so far as aerial transport is concerned.

On another occasion when I was addressing the House, I pointed out that we had a tract of land 1,600 miles long and 1,000 miles deep just north from here where aeroplanes could be used for exploration purposes and for the carrying of scientists, geologists, naturalists, topographers and photographers, in order that the country might be properly mapped and explored. I also pointed out that the geologists have told us that the Cobalt and Porcupine formations in Northern Ontario extend northward.

There is a great field for the use of aeroplanes in a scientific way. But, what I particularly desired to bring to the attention of the Committee was an accident that occurred on the west coast of this continent last fall when a steamer was on the rocks of the Lynn canal, and when 343 people were drowned, not one person being saved. A great work could be done on the coast in aiding shipping in bad weather by the use of aeroplanes, and I would be glad if the minister could say as to whether the plans

of the Government contemplate a service of that kind more particularly on the Pacific coast and in British Columbia.

Mr. A. K. MACLEAN: The service to which my hon. friend (Mr. A. Thompson) refers is one of the many that it is intended shall come within the purview of the board. Just how practical a service the aeroplane might render on the coast is one which, of course, will have to be determined by experience. But at least I can inform my hon. friend that that is one of the subjects which will have the attention of the board when it is established.

Mr. MOWAT: With regard to clause 3, which with clause 4 is the chief operating clause of the Act, I would say that the draughtsman has done his work well, but there is one thing that he has not had present in his mind in connection with the matter and that is as to the question how aeronautics is going to interfere with the property rights of the public. I would suggest to the minister that he consider that point before the Bill goes through. According to the law, as it has stood for many hundreds of years, the right of the property owner extends usque ad caelum ab inferno, that is up to the heavens and down beneath the earth. That is his property. It may be that we have arrived at a stage in the world's history in which a machine has come which will suddenly be launched across his property. While a flier may be far up in the air and could not be said to do very much harm to a man's property, sometimes aeroplanes come very near to a man's house and they do make a great deal of noise. You may have claims made by certain property owners who do not want these things coming over their houses or property. There is nothing in the Act which enables the Government to say that aeroplanes shall have the right to pass over a man's property or to define the conditions under which that right shall be exercised. I do not share with the minister the doubt that he seems to have as to his power to enact this legislation as having reference to the point raised by my hon. friend from Kamouraska (Mr. Lapointe).

Mr. A. K. MACLEAN: As to provincial service only.

Mr. MOWAT: Quite so. Property rights will be provincial. You have the right to legislate with regard to that because you have the exhaustive clause of the British North America Act which says that anything which is not provincial is Dominion.

You have besides that, the Post Office service, the naval service, and the military service, and, last, but not least, the service suggested by the hon. member for Yukon (Mr. A. Thompson)-the geological service. That brings it into the Interior Department. With all these uses in the different departments of the Government to which the aeroplane might be put, there seems to me to be a preponderating case in support of the contention that these are Dominion matters and would naturally come under the control of the Dominion authorities. How could an air man know where the exact position of the provincial boundary was? When he starts out on his journey he must have some rule or regulation which will carry him to the end of it in Canada without regard to what particular province in Canada he may be in. I doubt if any one will raise the point that this is a matter for exclusive provincial jurisdiction. If any one does, it behooves the Dominion Government to fight for Dominion rights with all the power they have. I agree that it is a good general purpose Bill. It is impossible to foresee all the things that will come under it but its provisions are expressed in general terms and if the minister will consider the addition of a clause which will give the right to go over properly either with or without compensation- I do not care which-he will be making a Bill which will do for the time being and until we know more about the subject. It seems to me that the Bill should pass at this session even if it is not wholly adequate to provide for all cases so that the world may know that Canada, is, as usual, in the van in regard to improvements in science.

Mr. A. K. MACLEAN: As my hon. friend (Mr. Mowat) in closing, referred to the necessity of legislation at this session, I would like to emphasize the statement a little farther and say that I am very anxious to have the Bill become law at once and that I shall probably ask His Excellency's assent to this Bill long before the closing of Parliament. I do not desire to amend the Bill with a view of abrogating any of the common law doctrines in respect to property rights in the air. In view of recent developments, the point is one for the courts to determine but I doubt very much if that doctrine would be held to have much validity under the circumstances. I would refer my hon. friend to paragraph (i) of section 4 which reads as follows:

(i) the institution and enforcement of such



laws, rules and regulations as may be deemed necessary for the safe and proper navigation of aircraft in Canada or within the limits of the territorial waters of Canada;

The subsection 3 immediately below reads as follows:

(3) All regulations enacted under the provisions of this Act shall be published in the Canada Gazette, and, upon being so published,

shall have the same force ~~in~~ law as if they formed part of this Act.

The important thing to have in mind in aerial navigation is the protection of life and property, and I have no doubt the board will provide by regulation that no flying machine shall approach the ground, or approach a building, within a certain number of feet. I have heard the story frequently, and I assume it is a fact, of somebody when flying in the city of Vancouver entering a bedroom where a patient was being attended by a doctor; the machine and pilot landing in the bedroom. We will seek to avoid the repetition of such a discourteous act as that by providing a regulation that the flight of the airplane shall be of a certain height in order to safeguard, so far as is possible, the safety of property and person. I submitted the Bill to the Justice Department before introducing it, and was told that the measure was perfectly constitutional and about the best that could be done to meet the situation for the time being.

Mr. CRONYN: I rise to support the suggestion of the hon. member for Maisonneuve (Mr. Lemieux) that this is a good opportunity to really consider Government ownership in connection with aeronautics, and I bring the point up under subsection (11) of the clause under discussion. I would urge upon the minister, when preparing the regulations considered necessary for the control or operation of aeronautics in Canada, to make those regulations so drastic for the time being that the Government will be able to keep that control within its own hands. I think one of the tests to be brought to bear on the question of public ownership is whether the particular business under consideration has become, or is likely to become, a natural monopoly; and while it is impossible for us to foresee, as was instanced in the case of the Bell Telephone Company, to what extent aeronautics may become a monopoly, there is some danger of it. Some months ago I overheard a discussion in New York about the formation of a wealthy syndicate to acquire the landing places around the great cities in the United States, and thus to completely control aeronautic operations,

or aviation between those points. It is evident that unless an aeroplane can come close to the heart of a city to make a landing its speed avails little, because the time consumed after the landing is made to reach that centre, takes so much off the time gained between cities that the aeroplane comes then into competition with the railway. I might also be permitted to point out to the minister that Mr. Rudyard Kipling, many years ago, drafted a code of aeronautics. Following his wonderful tale which, I think, is called "The Night Mail," he set as a matter of tour de force of the imagination, prepared a series of rules. I have not read them for many years, but in those rules Mr. Kipling covers some of the very points we have been considering this afternoon.

Mr. McXENZIE: I think it is only fair when we are dealing with so practical a phase of the development of aeronautics as the present, that I should suggest to the minister that he would in connection with this board and in connection with any legislation on this subject enlist the sympathy and help of the father of aeronautics in this country, I refer to Dr. Bell, who has a home at Baddeck, N.S., although he sometimes resides in Washington. I had the pleasure in September 1896 of being present in the machine shop experimenting office of Dr. Bell in the town of Baddeck, when it was considered a great achievement in aeronautics that he could cause a certain machine that he had in his laboratory to rise three or four inches from the ground. It is gratifying to know that we have today reached such an advanced stage of development in aeronautical science. Dr. Bell is a Canadian, born in Brantford in the great province of Ontario and is well known, and he spends about ninety per cent of his time at his beautiful home in the neighbourhood of Baddeck in the county which I have the honour to represent, and I think it would be only fair on the part of the Government to recognize his great services, the great research he has displayed, and what he has done for this science. The first airship that was ever built in Canada was constructed at his workshops at Baddeck, and did considerable flying. It was operated by a Baddeck boy, young McCurdy, who was famous afterwards as a flier and who was in charge of some of the works at Toronto or Camp Borden in the early stages of the war. I do not know where young

McCurdy is now.

Major-General MEWBURN: Long Branch.

Mr. McKENZIE: He is the young man who took charge of the first flying machine that was built in Canada, if not on the continent of America, under the direction of Dr. Bell. He was assisted by another young Canadian, also well-known to fame—or at least his progenitors were, young Baldwin, the grandson of the famous Canadian statesman of that name. Mr. Baldwin is in charge of Dr. Bell's works at Baie d'Uxville, where not only flying machines, but machinery of the most advanced type in connection with transportation, are turned out. I therefore suggest to the minister that it would be a proper and well-deserved compliment, and a mark of recognition on the part of the Canadian people and Canadian Government, to Dr. Bell to enlist his sympathy and utilize as much as possible his great knowledge in connection with the enterprise in which Dominion authorities are now about to engage. As to landing places, if it is desired to take advantage of possibly the greatest site in the world, let me point out to the minister that his own native town of North Sydney is the place that was selected by both the United States and Canadian Governments while the war was on, and when they were looking for the very best location for the starting of an aerial service. At that time North Sydney was chosen as the best place on the east coast of America for the purpose.

A large amount of money has been expended on the station there, and very extensive buildings erected which are now owned by the Government. Large areas of land were also acquired for the purpose of carrying on experiments, and I would suggest to the minister that the board to be appointed under this Bill are the proper persons to take charge of that property and see that it is not lightly thrown away.

There is an idea that a portion of this land is to revert back to some of its original owners, and if that should turn out to be the case the Government may not again acquire it as cheaply as they did in the first instance.

Those works were constructed, at the nearest point to Newfoundland, and there at least forty or fifty machines were built and put in operation last summer.

We got so used to flying machines last summer in North Sydney that it was no more a novelty to see an aeroplane in the air than an automobile on the street. I am bringing these matters to the attention of the minister so that he may not forget to make use of the knowledge and experience

of those great men who are to all intents  
and purposes Canadians, and of the development  
that has already taken place in  
connection with the use of aeroplanes and  
hydroplanes for commercial purposes.

Mr. A. K. MACLEAN: The property at  
Sydney will, of course, under this Bill, come  
within the control of the board, and it is  
not the intention of the Government, so far  
as I know, to part with it. I quite agree  
with my hon. friend (Mr. McKenzie) that  
it is a very desirable property, particularly  
in connection with trans-Atlantic opera- tions. I am also grateful to him for calling  
the attention of the Government to the  
pioneer work of Prof. Graham Bell. His  
very valuable services in the science of  
aeronautics ought to receive proper recognition,  
and I shall be very glad to submit  
to my colleagues the suggestion of my hon.  
friend.

Mr. SUTHERLAND: The clause now before  
the Committee affords a good deal of scope  
for the imagination of hon. members in  
defining the duties of the Air Board. When  
we contemplate the great strides that have  
been made in the science of aeronautics  
during the last five years and the possibilities  
of the future, I think we may well  
realize that this is likely to become a very important service. I do not feel very much  
concerned about the danger of not having  
sufficient landing places. If there is one  
thing we may claim to have in abundance  
it is sufficient room for that purpose.

The question raised by the hon. members  
for Kamouraska (Mr. Lapointe) and other  
hon. members is, I suppose, a constitutional  
one, but to the ordinary layman it  
seems inconceivable that any province  
should claim a monopoly of the air. This  
is a case where provincialism should not  
creep in, and certainly it ought to be within  
the jurisdiction of the Federal Government.  
It seems to me that the Government have  
shown good judgment in promptly bringing  
a measure of this kind before Parliament.  
No doubt the Air Board will keep in touch  
with changing conditions and report to  
the Government from time to time, and  
I think this section should be made as  
broad as possible in order to give the Board  
the fullest control of the air service. But with  
regard to the disposal of certain machines  
which were in service during the war, those  
machines might be all right for training purposes,  
but a very different type of machine  
will be needed for commercial purposes.  
I do not altogether agree with the view  
that the Government should exercise too

## Notes on "Civil Aviation"

rigid a control over the service. I think something should be left to the ingenuity or individual initiative if this service is to develop as we would like to see it develop. Our Canadian boys made an enviable record in the air at the front, and the Government would certainly be lacking in their duty if they failed to retain in our air service as many as possible of those splendid men who made such brilliant records overseas.

When we consider the 5 p.m. immense undeveloped resources of this country, and what can be accomplished through such an air service I think it is very important that instead of restricting the powers of this board we should extend them as far as possible. Practically the whole northern part of Canada is unexplored, and we have as yet no idea as to the value of our resources in that vast territory. This service can render very valuable work in the way of exploration and fire protection.

Mr. TOLMIE: I think the Government is to be congratulated on taking this progressive movement and in recognizing the splendid work done by our air men at the front.

In a country like British Columbia this service can be very usefully developed in connection with the handling of forest fires, and also in exploration work.

But I hope one of the first things to be taken up by this Board will be to thoroughly investigate the possibilities of using the service for rescuing shipwrecked people. We have had many serious wrecks on the Pacific coast, some of them almost within a stone's throw of shore, such as the Princes Sophia recently, and the Valencia wreck on the coast of Vancouver Island a few years ago. The latter boat was within a few hundred yards of the shore, but owing to the shallow water and the steep cliffs it was an utter impossibility to rescue the passengers, and they dropped off the rigging one by one and only a few were saved. In such cases an aeroplane could render valuable help by carrying a cable to the ship by means of which those on board might be brought safely to shore. I trust this will be one of the first things investigated by the Air Board.

Section agreed to.

On section 4-powers of Air Board to make regulations with approval of Governor in Council.

Mr. McKENZIE: In the matter of penalizing a person who violates the rules, has the minister given attention to the question of jurisdiction? Where will the offender be tried and the penalty be imposed?

Mr. A. K. MACLEAN: Such a case would be comparable, I suppose, to a case against an offender engaged upon a ship; he would first be served by a process at the court.

Mr. LEMIEUX: How about the customs laws?

Mr. A. K. MACLEAN: Section 5 provides that the board shall have power to control the places in Canada where a landing may be made from a foreign country.

Section agreed to.

On section 5-officers and men:

## Notes on "Civil Aviation"

Mr. A. K. MACLEAN: The purpose of this clause is to provide for the control and discipline of those employed in connection with the Government service. For instance, if it was an air service in connection with national defence, the Air Board would acquire these powers, which are somewhat similar to the powers enjoyed by the Naval Department and the Militia Department. If the service had something to do with policing the unorganized territories in Canada, it would probably be necessary to house and clothe our men - The powers are very general, but important and necessary.  
Section agreed to.

On section 7-payment of expenses, etc., under the Act.

Mr. BELAND: Is it contemplated to have a certain number of aeroplanes reserved for the exclusive use of ministers of the Crown? It would mean a great saving in time-and time is precious just now, as is evidenced by the fact that we are interfering with the ordinary course of the sun to gain some of it. To have some aeroplanes reserved for ministers would afford them an opportunity, when they travel in that way, to see very much more of the country which they govern. Further, it would avoid the repetition of the fearful plight in which my hon. friend (Mr. McCoig) found himself at the station in Toronto the other day, when he was unable to get a sleeper because of the fact that three private cars were attached to the Ottawa train.

Major-General MEWBURN: You would not want to see the ministers any more up in the air than they are now, would you?  
Section agreed to.  
Bill reported.

### 07 May 1919 - THE CANADIAN AIR BOARD.

In the Dominion House of Commons the Government Bill creating an Air Board to - control aeronautics in Canada was read for the first time. A Minister of the Crown will preside over the Board, on which will be represented the Departments of Militia and Naval Service. Authority will be given to the Board to make the necessary regulations to undertake technical research and to grant licences to pilots and for commercial services.

8 May 1919 - THE CANADIAN AIR BOARD BILL (Bill 80) "An ACT to authorise the creation of an Air Board for the control of aeronautics" read for the 1st time by Hon. Sir James Loughheed.

### 13 May 1919 : AIR BOARD BILL.

#### SZCOND READING.

Hon. Sir JAMES LOUGHEED moved the second reading of Bill 80, an Act to authorize the appointment of an Air Board for the control of Aeronautics.

He said: Honourable gentlemen, the purpose of this Bill is, as indicated by its title, the control of aeronautics by the Government. Up to the present time, in our legislation, we have been regulating human endeavours and human activities both on land and sea; but a new sphere of human endeavour has opened up, namely, the air, and it has become important that the Government should determine the control and regulation of aeronautics. It is quite manifest to honourable gentlemen that at an

early day the airship must necessarily become a very important factor in the activities of commercial, military, and naval life within the boundaries of the Dominion. It will doubtless shortly be used for postal purposes and for the prevention of fire in forests and timber areas, as well as for purposes of defence, both by land and sea. There will have to be routes of transportation determined. This can be done only by a central authority, namely, the Government of Canada. Of course, very nice questions may arise as to the authority of the Dominion Government over the provinces in the working out of this matter. It is a subject that, of course, was not under contemplation and could not have been foreseen at the time of the passage of the British North America Act. It may possibly yet require some amendment to that Act to determine with whom the authority lies in matters connected with aeronautics. I think honourable gentlemen will agree with me that it is desirable that this very important subject should be controlled exclusively by the central Government.

Hon. Mr. CASGRAIN: Certainly.

Hon. Sir JAMES LOUGHEED: It is therefore "with a view to the working out of all those problems that this Air Board, is being formed. It will be seen from a perusal of the Bill that one of the members of this board will be a minister of the Crown, and that the Department of Militia and likewise the Naval Department will be represented on the board. I think it probable, therefore, that the board will include two members outside of those departments; but so many problems will have to be investigated as to render it desirable that there should have a fairly large board. The members are to be appointed for three years, and doubtless by the expiration of that time the subject will be very much defined and much more developed than it is today. Such are the objects of the Bill which is now before us.

Hon. HIEWITT BOSTOCK: Honourable gentlemen, I think that the policy of the Government in bringing down this Bill is adopted rather late in the day. If any criticism is to be made of the action of the Government in this matter, it is that action of this kind should have been taken before now, because at the time the Imperial Munitions Board was winding up its war work, it disposed of a great deal of plant which it might have been advisable for the Government to take over, taking advantage

of the prices at which that plant was disposed of. The departments that will have charge of the air service would, of course, have been able to make a very advantageous bargain in taking over a great portion of the plant that was at that time at Camp Borden.

The object of the Bill, as I understand from my honourable friend, is more to regulate the activities of the companies and of the Government themselves in regard to aeronautics. At the present time no very active policy is to be adopted in the way of establishing a service of dirigibles or aeroplanes in connection with any of the departments. I would, however, point out to the honourable gentleman that the Naval Department should, at any rate, have as soon as possible a service of hydroplanes, for the purpose of dealing with wrecks on the coast. In British Columbia last year we had a case in which it would have been quite possible, had there been a hydroplane service on the coast, to prevent a great loss of life. I would take this opportunity of urging upon the Government the desirability of considering that matter at as early a date as possible.

Hon. J. P. B. CASGRAIN: The Government is, I am sure, to be congratulated upon bringing in a Bill of this sort. It was only the other day that we had here a deputation, which I attended as vice-president of the Aerial League of the British Empire, Canadian section, to ask the Government to lend to a certain association which, I think, is called the St. Maurice Lumber Protection Association, two hydroplanes in order to protect some twenty square miles of valuable timber limits—the most valuable, I suppose, that exist anywhere in Canada. The Government agreed; but I may say they attached very stringent conditions: they wanted this association to assume the responsibility for the total cost of those hydroplanes. They cost some \$40,000 apiece, making a total of \$80,000. However, the association agreed and signed, but I think that they regarded the agreement only as a scrap of paper, because it is not very likely that they would be willing to pay \$80,000 for the experiment. When the experiment has been conducted for some time, the Government will be in a position to know whether the hydroplanes are suitable for this work or not. That vast area of 20,000 square miles is all covered with a network of telephones, wireless, and observation towers for fire protection. The idea is that the hydroplanes will be able to



go from place to place and when they discover fire to report immediately by wireless to the telephone station, which would in turn report, and a man would proceed at once to the place where the fire is and try to extinguish it.

As to returning the hydroplanes in good order, I think the Government is a little too exacting. In the first place, the aeroplanes, after a year's service, might be absolutely useless, fit only for scrap. It is very doubtful if they could continue flying for a year without coming down on some pine trees or spruce trees and getting demolished.

I suppose the association will have to throw itself on the good will of the Government.

The honourable leader of the Government suggests that the provinces may have something to say about the matter. Well, if this is a work for the general advantage of Canada, if we are to build stations and hangars and aerodromes throughout the various provinces, and if at present railway stations, railway sidings, and other railway work can be built, surely this new work can be done without interference from the provinces.

Of course this is not the time to discuss the details; but when they are before us for consideration I think we shall find that the best things, especially for looking after timber limits, are not aeroplanes, which necessitate landing stations, that are not easily to be found. If anything goes wrong with an aeroplane flying over a forest, there may be no place for it to land. Hydroplanes are used on the supposition that the machine may give out when it is over some body of water. If it gives out when flying over the land, the plane is ruined and the aviator loses his life. The latest books on this subject state that dirigibles, that is, lighter-than-air dirigibles, filled with helium, which has a capacity many times greater than hydrogen, will be the most suitable for this purpose. The dirigibles would not have to be very big; there would be only one or two observers; and they would be much safer than aeroplanes, because with the aeroplane, if anything goes wrong with the machinery and it has to come down, it is almost impossible to make a suitable landing. For the landing of an aeroplane you must have a very wide field. You will pardon me if I speak so much about it, because two of my sons are aviators, and I have heard a great deal about it from them. It seems that in order to land you must have a very wide field with a smooth

surface, and the landing must be made at a tremendous speed. The machines travel at the rate of 125 or 130 miles an hour, and it may surprise honourable gentlemen to know that when they touch the ground they are going at the rate of 40 or 45 miles - sometimes 50 miles, an hour; so the slightest obstacle would cause the machine to turn turtle, destroying the machine and killing the aviator. You will therefore readily see that aeroplanes would not be used for scouting work in the forests; it would be necessary to use slower machines, which could land at less speed. Still it would be necessary to have a suitable landing place, and, as we all know, there are no such places in timber limits. However, that is a detail. I think we ought to commend the Government for what it is doing. There is undoubtedly a great future for dirigibles.

Hon. RAOUL DANDURAND: Honourable gentlemen, the honourable leader of the Government has said that there may be some difficulties to adjust with the provinces in the administration of this Act and in the division of powers between the provinces and the Dominion. It seems to me that there are certain services that can be controlled only by the Federal Government.

The Customs Department will need to keep its eyes wide open to see that no contraband comes through the air. By what arrangement will our neighbours carry contraband shall be prevented is a question which I have not studied, but I foresee that the two countries will have to adopt very strict and minute regulations for the landing of those planes.

Hon. Sir JAM-NES LOUGHEED. They may need free trade.

Hon. Mr. DANDURAND: They may bring about free trade, which would be a godsend for the world if we had free trade all round. Yet the provinces may claim that, as they have control over land routes, the air routes should be as free and should also belong to the domain of the provinces. But this is a broad subject which I will not undertake to treat just now. There will be, of course, the question of the relations between the provinces, where the question of customs will not intervene. My only fear, from the news I read in the newspapers yesterday and this morning, is that the province of Quebec, which has limited itself to beer and wine, may be invaded from the air with Ontario whisky.

The motion was agreed to, and the Bill was read the second time.

The Senate adjourned until Tuesday, May 13, at 3 p.m. AIR BOARD BILL.  
CONSIDERED IN COMMITTEE AND REPORTED.

On motion of Hon. Sir James Lougheed, the Senate went into Committee on Bill 80, an Act to authorize the appointment of an Air Board for the control of Aeronautics.  
Hon. Mr. Watson in the Chair.

Section 1 was agreed to.

On section 2-Air Board:

Hon. Mr. BOSTOCK: The gentlemen referred to in section 2 could not be in addition to the other members.

Hon. Sir JAMES LOUGHEED: Oh, no.

Hon. Mr. BOSTOCK.: Then, referring to subsection 5, if these gentlemen are officials of other departments they would not receive salaries in addition to their salaries as officials of those departments.

Hon. Sir JAMES LOUGHEED. I would not think so. Of course, I cannot speak with definiteness at the moment; but it would be unusual if that were the case.

Hon. Mr. BOSTOCK: I think we have had one case at least in the past of an official holding positions in two different departments, and drawing salaries in both.

I think that is objectionable.

Hon. Sir JAMES LOUGHEED: Of course, if that should be done, it will be necessary to have an item placed in the estimates, and there will be an opportunity in the other House of criticising any such step as paying two salaries to one official.

Section 2 was agreed to. On section 3-duties of the Air Board:

Hon. Mr. BOSTOCK: Paragraph c and this section says:

It shall be the duty of the Air Board to—construct and maintain all Government aerodromes and air stations, including all plant, machinery, and buildings necessary for their efficient equipment and upkeep.

Is it the intention of the Government that the Air Board should take all that work into their own hands? The Naval Department, the Militia Department, and possibly the Post Office Department, might be interested in this question of aerial service. The Naval Department and the Militia Department would be doing it more or less for war purposes, and the Post Office Department for commercial purposes.

Would it not be better that they should be able to construct those aerodromes and do that kind of work themselves?

Hon. Sir JAMES LOUGHEED: I think it is very desirable that there should be uniformity and standardization as far as possible, and, furthermore, that all this

work should be supervised by a body that has familiarized itself with the question of aeronautics. My honourable friend will readily see that without delegate to other departments the duty of attending to aeronautics would lead to great confusion. It is desirable that this Board should make a special study of aeronautics during the three years for which it is appointed, with a view to making a practical application of aeronautics to all the public services of the Government. I think the policy is an excellent one.

Hon. -Mr. BOSTOCK: I think the policy laid down by my honourable friend could be maintained if the Air Board had authority. We see that those other departments carried out their instructions. The Board could study the matter and draw up regulations and suggest plans and give other necessary information which the other departments could follow. I do not see that it is necessary for them to go into the actual construction.

Hon. Sir JAMES LOUGHEED: This question necessitates a special study of the features that may be involved in the carrying out of the various problems with which we have to deal; and, if the suggestions of my honourable friend were carried out, it would be necessary to have experts in practically all of those departments.

It is very much better that those experts should be centred in one body, and that they should supervise and carry out the means and methods of transportation by air, and the equipment involved in doing that.

Hon. Mr. BOYER: Would not paragraph i cover the point raised by the honourable the leader of the Opposition? It says: To co-operate with the officers of the Departments of Militia and Defence and of the Naval Service on all questions relating to the air defence of Canada.

And could not the postal service be added?

Hon. Sir JAMES LOUGHEED: Yes. As my honourable friend will clearly see, co-operation and co-ordination between the central body and the various departments is necessary.

Hon. Mr. BOYER: Only two departments are mentioned: Militia and Defence and the Naval Service.

Hon. Sir JAMES LOUGHEED: Of course. Defence involves a very much more extended service than would the commercial feature. Defence, either by land or by sea, is something that requires very

## Notes on "Civil Aviation"

special knowledge of military or naval science.

Section 3 was agreed to.

On section 4--powers of Air Board to make regulations:

Hon. Mr. BOSTOCK: I would ask the honourable leader of the Government, with respect to the making of regulations respecting aerial navigation, what steps do the Government propose to take in dealing with matters in which the interests of the provinces and those of the Dominion might be considered as conflicting? Is it proposed to consult the provinces in regard to such matters?

Hon. Sir JAMES LOUGHEED: I can scarcely anticipate what constitutional difficulties may arise. Clearly, where any service is of an interprovincial character, the authority would be vested in the Dominion Government; but a question might arise as to a service entirely within the boundaries of a province, in which the Dominion Government would be particularly interested--possibly a service that might be established in connection with some object or subject in which the Dominion Government is exclusively interested. What might be the constitutional standing of the Dominion Government in regard to carrying on a service absolutely within the boundaries of the province? I cannot say at the moment. I do not want to anticipate difficulties. As I said the other day, when the British North America Act was passed we could not have expected that science would make such progress that the air would be used for transportation systems. Therefore, in matters of this kind, we shall simply have to allow the future to take care of itself.

Section 4 was agreed to.

Sections 5, 6, and 7 were agreed to.

The title and preamble were agreed to.

The Bill was reported without amendment.

14 May : AIR BOARD BILL.

THIRD READING.

Bill 80, "An Act to authorize the Appointment of an Air Board for the control of Aeronautics."--Hon. Sir James Lougheed. In His Majesty's name. His Excellency the

Governor General doth assent. After which His Excellency the Governor

General was pleased to close the Second

Session of the Thirteenth Parliament of the

Dominion of Canada with the following

Speech: [...] Almost the entire Canadian Expeditionary

Force has now returned to our shores and the

task of demobilization has proceeded with much

greater expedition than was at first believed to

be possible. The work of assisting the returned

men in vocational training and in settling

upon the land has made rapid advances,

## Notes on "Civil Aviation"

and It Is believed that In this respect Canada stands second to no country In the world. The volume of legislation enacted at the present session has been both comprehensive and important. The measures respecting Soldiers' Settlement, Pensions, Combines and Monopolies, Technical Education, Construction and Improvement of Highways, and Public Health are especially noteworthy. Equally important are the Bankruptcy Act, the measures authorizing the establishment of an Air Board for the control of aeronautics and the Act providing for the operation of the Canadian National Railways. I trust that these and other important measures which you have considered and approved will be attended with marked advantage to the public interest.

28 May 1919 :

Aeronautics at London University, London UK : At the meeting of the Senate of London University it was resolved to institute a Chair of Aeronautics tenable at the East London College.

This is in addition to the "Zarahoff Chair of Aviation" at the Imperial College of Science and Technology, London the first appointment to which has still to be made, although the requisite funds were given to the Government nearly two-and-a-half years ago.

Post 1919 : Ernest L. Janney becomes general manager of Canadian Northern Traders

post 1919 : Canadian Northern Traders declares that it plans to use five JN-4 aircraft and an unspecified number of airships to exploit resources in northern Quebec.

Canadian Northern Traders under Janney : A party ascended the Moise River that spring and lose two men [killed / died]. The survivors, paid only in company stock, took jobs elsewhere.

16 October 1919 :

Ernest L. Janney is arrested in Cornwall, Ont. Charged with using a bad cheque to buy a JN-4 (Ottawa Citizen)

January 1921 :

Ernest L. Janney now in Edmonton, announces plans to run an air service from Peace River, Alta., to Fort Norman, Northwest Territories, using dirigibles. The air service never started. Alberta authorities halt trading in "Janney Company" stock.

Ernest L. Janney continues to sell shares in the "Janney Company" until July 1921

1919 :

Oswald Short [Short Bros.] designs an duralumin aircraft [silver streak].

UK-Air Ministry turns down Oswald's concept because of the "unproven" construction material.



01 January 1919 : "Civilian" aviation resumes within Germany.

07 January 1919 : United States Navy Air Stations at Halifax and Sydney paid off.

January 1919 :

US Brigadier General William "Billy" Mitchell is stationed at the American Army of Occupation H.Q. Coblenz, Germany. From this position, Mitchell was ordered back to the United States for duty as the assistant director of US Military Aviation.

## Notes on "Civil Aviation"

07 January 7, 1919 United States gifts to Canada: 12 HS-2Ls, 26 Liberty engines, 4 kite balloons.  
January 1920 : RNAS-C Dartmouth now Canadian Air Board entity: performs civil and military duties.  
. - See more at: <https://legionmagazine.com/en/2016/02/the-first-air-war-at-sea/#sthash.af5DtQi1.dpuf>

1919 : USN donates 12 HS-2L flying boats to Canada.

February 1919 : Compagnie des Messageries Aériennes (CMA) is established in France. CMA later becomes "Air France".

4 February 1919 : US Brigadier General William "Billy" Mitchell dines with Trenchard and Secretary of State for War and Air Winston Churchill. (Andrew Boyle, *Trenchard* (London: Collins, 1962), 328–31; Mitchell, *Daily Journals January–March 1919*, box 4, MP; James C. Cooke, *Billy Mitchell* (Boulder, Colo.: Lynne Rienner, 2002), 107)

05 February 1919 : Deutsche Luft-Reederei (Lufthansa) restarts operations.

08 February 1919 : Lignes Aériennes (Henri) Farman is established.

9 February 1919 :

US Brigadier General William "Billy" Mitchell lunchen with Trenchard. Mitchell left no record of these discussions, but when he left London in mid-February he had become a "full-fledged apostle for an independent air arm" similar to the British model. (Andrew Boyle, *Trenchard* (London: Collins, 1962), 328–31; Mitchell, *Daily Journals January–March 1919*, box 4, MP; James C. Cooke, *Billy Mitchell* (Boulder, Colo.: Lynne Rienner, 2002), 107)

20 February 1919 :

Brigadier General William "Billy" Mitchell sails from Liverpool to New York. With Mitchell was Lieutenant Commander Jerome C. Hunsaker, the U.S. Navy's leading authority on aircraft design.

Hunsaker, was returning home after having served on the Allied Naval Armistice Commission, which had been investigating German naval aviation while securing the surrender of German aircraft.

Hunsaker had prepared more than 90 reports on British, French, and Italian aviation as well.

The two men should have had a common bond, but "Hunsaker took an immediate personal dislike to Mitchell, whom he regarded as a masterful 'politician in uniform,' 'charming' in some ways but with a certain 'asinine quality.'"

Mitchell expounded to anyone within earshot on the lessons of the war and the importance of an independent air force.

The general and his cohorts, Hunsaker recalled, were "fully prepared with evidence, plans, data, propaganda posters, and articles to break things wide open for air power as the sole requisite of the national defense in the future.

February 1919 :

United States : The U.S Army was licensing domestic aviation under wartime [53] emergency legislation.

Surplus military aircraft in the United States were being put on the open market with virtually no control over how and where they might operate. Aviation anarchy loomed.

An editorial in the U.S Army and Navy Journal for 25 June 192 said that "in both services, Borah's bill (S.J.R. 77) was generally credited to the advocates of the united air service plan with the idea of keeping it alive in the face of the general position to uniting the air services manifested in Congress, and particularly in the Senate:

There is no satisfactory secondary treatment of the British experience, The reasoning behind the change in the pre World War I system is presented in Great Britain, Air Ministry, Committee on Education and Research in Aeronautics, Report, presented to Parliament 12 Dec, 1919 (London, 1920).



## Notes on "Civil Aviation"

The results can be traced in *Aeronautics: Report of the Advisory Committee for Aeronautics for the Year 1919-20* (London, 1921), and *Aeronautics: Report of the Aeronautical, Research Committee for the Year 1920-21* (London, 1921).

03 March 1919 : Eddie Hubbard and William Boeing carry 60 "Air-Mail" letters from Vancouver, British Columbia, Canada, to Seattle, Washington, USA  
William Boeing (Boeing Model #5, "C" Trainer)  
Pacific Aero Products C-700 Float-Plane. Designed by company engineer Wong Tsu (Masters in Aeronautical Engineering, M.I.T) Wong Tsu, only 56 Model "C" were built. C-700 was modified to "CL-4S".

13 March 1919 : Wallace Turnbull Files patent application for a propeller with variable pitch blades.

22 March 1919 : Lignes Aériennes Farman operates the 1st "Official" international passenger carrying flight between European capital cities using a Farman F.60 "Goliath" piloted by Henri Farman between Toussus-le-Noble in France to RAF station Kenley in London England carrying 11 military personnel.

25 March 1919 : No. 1 Wing C.A.F formed to administer No. 1 & 2 Sqn's C.A.F

25 March - 1 April : No. 1 & 2 Sqn C.A.F move to Shoreham-by-Sea, England.

31 March 1919 : Winston Churchill persuades Trenchard to take up the post of Chief of Air Staff. Churchill / Trenchard angers the Army Council by creating new officer ranks in the RAF. (including the "Engineer"!)

Trenchard founds the RAF's officer training college at Cranwell.

1922 : RAF Staff College created by Trenchard at Andover to train RAF's middle ranking officers.

Trenchard absorbed the Royal Naval Air Service into the RAF – much to the anger of the First Sea Lord, Admiral Beatty.

In the 1920's the RAF was used throughout the British Empire and it was expected that officers in the RAF would do a five-year stint abroad at some time in their career.

1925 Trenchard founds the University Air Squadron scheme: Oxford, Cambridge and London universities. introduces the RAF to three major universities.

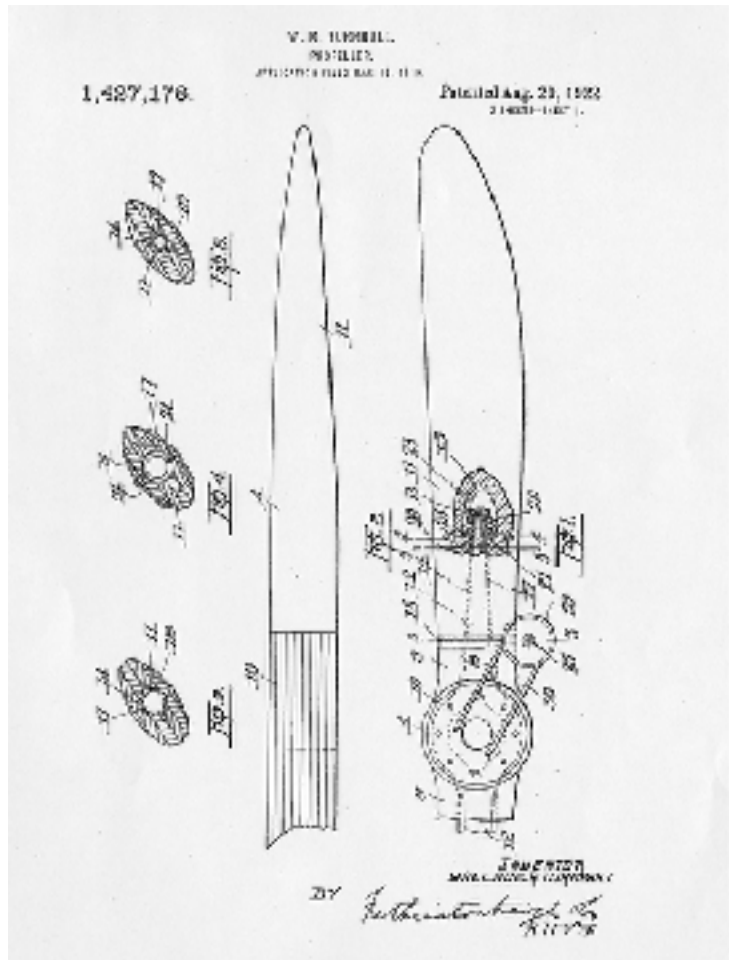
1 April 1919 No. 1 Wing CAF assume administration duties.

23 April 1919 : The *North Sea Aerial Navigation Company* begins "passenger" service between Leeds and Hounslow using ex-RAF Blackburn RT.1 aircraft.

Between April 1919 and January 1920 : **Canadian government decides not to retain a permanent peace-time air force**

29 April 1919 : UK Government (Churchill) issues ANR.

- A. ANR bridges United Kingdom "Service" aviation into "Civilian" aviation.
- B. Regulations ultimately prescribe Quality requirements for Workers, materials and final product.
- C. 1919 UK ANR recognises individuals responsible for ensuring aircraft are "Fit to fly" (Engineers)
- D. 1919 UK ANR recognises individuals responsible for ensuring aircraft are safely operated in the air (Pilots)
- E. 1919 UK ANR introduces concepts for "initial and continuing airworthiness" to the civilian world.



## Notes on "Civil Aviation"

- F. Civil aviation operators / operations begin by using modified versions of redundant wartime aircraft designed to the structural strength and stability standards of the RE/RFC which evolved during the war.
- G. Civilian aircraft designed to Civil aircraft airworthiness requirements based upon the RE/RFC/A.I.D standards soon follow.

1919-1920 : UK Air Ministry : The AID "approved firms" system of "delegated inspection" begins. Delegated inspection: Evolution / development of the selective inspection system used by A.I.D during the war.

Private manufacturing and maintenance firms approved (1920) to inspect material on behalf of AID

Subsequently adopted for other "Inspection" roles within the aviation industry.

A.I.D's "delegated inspection" system:

- a) utilizes the specialized experience and skill of contractors' own inspection staff's and
- b) avoids a great deal of duplicated inspection,
- c) saves manpower hours of the Air Ministry's own official inspection staff.

Copied by numerous other countries Civil Aviation Authorities' inspection organizations.

1919 to 1944 : UK Air Ministry has responsibility for both service (Military) and civil (Civilian) aviation in Britain.

1 May 1919, he directed Assistant Secretary of War Benedict C. Crowell to form a commission to study aviation problems as they had developed in the principal Allied countries during the war. Baker made sure to instruct his independent-minded assistant "to limit himself to fact-finding and submit no conclusions as to air policy." <sup>21</sup> During the late spring and summer, the Crowell Commission—also known as the American Aviation Mission—visited France, Italy, and England to confer with various government officials, army and navy commanders, and aircraft manufacturers. the American Aviation Mission returned to the United States in July 1919, its members had concluded that something drastic had to be done to avoid the complete disappearance of the American aircraft industry. It recommended that oversight of all air activities of the United States be concentrated within a single department of aeronautics. But Secretary of War Baker, having specifically warned the mission not to intrude into policy, disagreed in his cover letter accompanying the report's release, stating that the group had "in my judgment gone too far." <sup>25</sup> Army, Navy, and civilian aviators faced different problems and needed to be trained separately, he said. (Source ref : Billy Mitchell takes on the Navy - US Naval History Magazine - October 2013 Vol 27 #5 - Thomas Wildenberg)

01 May 1919 : The 1st "Commercial Flight" under the new Civil Aviation Regulations for the British Empire, a Airco DH.9 bearing RAF registration C6054 operated by Aircraft Transport and Travel en-route from Hendon to Bournemouth crashes at Portsdown Hill in fog, killing both persons onboard.

11 May 1919 : The "Avro Transport Company" offers Britain's first "scheduled" air service from Manchester.

12 May 1919 : Wilfred Reid "Wop" May (the man that Baron Manfred von Richthofen was chasing when he was shot down and killed) DFC, contracts with the City of Edmonton to rent Curtiss JN4 "Edmonton" to promote flying.

19 May 1919 : "Wop" and brother Court form "May Airplanes Ltd", Edmonton. Mr. Pete Derbyshire - mechanic.

19 May 1919 : Canadian Government decides not to form a permanent peacetime air force, orders all CAF flying operations to cease and all equipment belonging to Canada dismantled and shipped home.

29 May 1919 : UK : British Cabinet approves "the gift" proposal to donate surplus aircraft to the Colonies.

29 May 1919 : 22,812 Canadian military personnel had served in the Royal Flying Corps (RFC), Royal Naval Air Service (RNAS) and RAF

30 May 1919 : Canada : Cabinet (Ottawa) rules that "Canada does not need and can not afford a post-war air force", disbands the CAF. However, with the formation of the Air Board - Canada's first governing body for aviation with both civil and military functions - a crack opened for a new CAF to be organized, first on paper and then as a part-time reserve - See more at: <https://legionmagazine.com/en/2015/06/canadian-flyers-go-to-war/#sthash.Nujh0vay.dpuf>

4 June 1919 - the UK government donates to Dominion and commonwealth nations Canada to about \$5,000,000 of equipment, including 80 aeroplanes and 14 flying-boats crated?

## Notes on "Civil Aviation"

06 June 1919 : Air Board Act of Canada 9-10, King George V Chapter II are issued together with the explanatory description of the Air Administration (Canada) & approved by the Chairman of the Air Board. Canadian Government Mandate of the Air Board:

1. To undertake technical Research for the development of Aeronautics, and.
2. Co-operating for that purpose with other institutions".

06 June 1919 : The National Research Council - Canada, to now study aeronautics and aviation safety.

06 June 1919 : Dept of Marine and Fisheries tasked with certificates for Pilots. Dominion Meteorological Service to collect, collate and distribute weather data. Air Board aircraft to take weather data - Temperature / humidity / pressure at various heights across Canada. Government Radio-Telegraph dept (Service) placed in charge of issuing "wireless" qualifications and issue of radio licenses. Board Members - all political appointees - (none know anything about aviation or public safety, but they were connected to those who did):

A.L Sifton, PC, KC - Chariman (one of 2 Canadians who signed the treaty of Versailles)

O.M Biggar, KC - Vice -Chair and JAG

S.C Mewburne, CMG, Minister of the Militia - Air

C.C Ballantyne : Minister of Naval Service

J.A Wilson : Ass't deputy Minister Dept. of Naval Service

E.S Busby : Chief Insp. Customs and Inland revenue

07 June 1919 : "May Airplanes Ltd" (Wop May) pilot George Gorman and Derbyshire deliver newspapers (Edmonton Journal) to Wetaskiwin : 1st commercial flight in western Canada.

07 June 1919 : "Daimler Air Hire" , a "Private" company is established in England by Frank Searle of the BSA Motorcycle Company. Recently of the Ministry of Munitions / head of the British War Mission to the United States in connection with the purchase of machine tools and other engineering products, retired Lieutenant Colonel CB, DSO.

14 June 1919 : John Alcock & Arthur Whitten Brown Depart St. John's Nfld in an attempt to cross the Atlantic "Non-Stop" using a Vickers "Vimy" twin engine bomber.

15 June 1919 : John Alcock & Arthur Whitten Brown crash their Vickers "Vimy" near Clifden, Galway, Ireland.

19 June 1919 : "May Airplanes Ltd" (Gorman and Derbyshire) deliver newspapers (Edmonton Bulletin) to St. Albert : 2nd commercial flight in western Canada.

19 June 1919 : Canadian Government

- A. decides not to form a permanent peacetime air force,
- B. orders all flying operations to cease,
- C. orders all equipment belonging to Canada dismantled and shipped home. (British issued Sopwith Dolphins / S.E. 5a / deHavilland DH 9?)

02 July 1919 : The Aeroplane : .Speaking at the Independent Force, R.A.F., dinner recently General Trenchard stated that a Territorial Force "scheme" (Programme) for the R.A.F. is under consideration. He gave no indication whatever of the lines 011 which the scheme is to be worked, but the natural assumption is that it will be more or less based on the Territorial Force scheme of the Army as organised by the Viscount Haldane. Whatever may be the popular opinion of Lord Haldane, as gathered from the common news-sheets, the indisputable fact remains that his Territorial "scheme" (Programme) was remarkably good, and that it played a very important part in such success as the British Army achieved in this war. Lord Haldane is recognised by experienced officers

of the General Staff as one of the best War Ministers whom this country has had for several generations. It is true that he was weak in his faith in aviation and that the R.F.C. owed him no thanks for anything, but it is none the less a fact that he did much for the British Army, and that it was largely due to him that the little British Expeditionary Force at the beginning of the war was the most efficient army in the world.

**Inducements to Airmen.:** Apart from officers and airman-pilots, a Territorial Air Force offers strong inducements to ex-airmen of the R.A.F. and to ordinary mechanics all over the country, as well as to youths of the higher social classes -who cannot hope to fly owing to physical defects.

One of the greatest harms done to this country in the early days of the war was the calling-up of skilled mechanics who were Territorial soldiers. They went into the line as infantry and were killed in hundreds. Many thousands more joined the Kitchener Annies as privates and were likewise killed, or maimed so as to be unfit for work. Now, if all the former air-mechanics of the R.A.F., and a number of other skilled mechanics from engineering works, garages, and so forth, all over the country, could be induced to join a Territorial Air Force, not only would the R.A.F. be thoroughly adequately manned in time of war, but these particularly valuable men would be saved for the reconstruction of industry after the war. One believes firmly that if all those thousands of gallant and patriotic mechanics and engineers 'who were killed during the first year of the war were still alive, the outlook for British Industry would be far brighter than it is to-day, for they would stand none of the Bolshevist nonsense and treason which is talked in our factories by the trench-dodging scum- who, unhappily, form so large a proportion of our surviving industrial population. A11 additional inducement to mechanics and engineers to join a Territorial Air Force is the fact that they would thus learn a great deal about the construction of aircraft and aero-engines, or—in the case of those who have already worked on aircraft—would keep their knowledge, up to date, and so would be ready to take important jobs in the Aircraft Industry when the great boom in Civil Aviation arrives, as it will do some day—though none can say whether it will be in two, five, fifteen, or twenty-five years' time.

**Inducements to Youths.**

Similarly, youngsters now at school would find it worth their while to join as airmen, because, in case of war, they would automatically drop into their places in the mobilised R.A.F. Those who were fitted for the job would certainly be promoted at once to be technical officers, if they were unfit to become pilots. Many would be taught to fly-. All the rest would be kept at a job at which they were already more or less proficient.

An attempt is being made already in a very small way —as already noted in this paper—to induce youngsters between 14 and 20 }

Tears of age to join a branch of a

London Territorial Battalion and learn something of aeronautical engineering as taught by ex-R.A.F. officers.

This is a step in the right direction—of perhaps one should rather describe it as an attempt at toddling in the right direction—but, obviously, although it has had the official blessing of General Trenchard, it is wrong in principle, as the steps of toddlers generally are.

In the first place, if the R.A.F. is to be the R.A.F. and is not to be a part of the Army', it is quite wrong that aeronautics should be taught under the auspices of a T.F. Battalion of the Army. In the second place, any instruction of this sort, if it is to be given, at all, should be given at an R.A.F. station of some sort—for preference in an aeroplance. shed at an aerodrome among actual aeroplanes. There are plenty to spare at Hendon and Hounslow and elsewhere. Or the classes might be held at the Agricultural Hall or one of the other numerous R.A.F. stores in London itself. However, doubtless this small matter will be put right when a proper cut-and-dried Territorial "scheme" (Programme) is laid down by the Air Ministry.

An Ancient Idea.

.So far one has merely indicated roughly how much easier it will be to induce people to join a Territorial Air Force than it can be to get recruits for the Territorial Army. There are many other inducements, but one has neither the time nor the space in which to set them forth. They may be left to the recruiting offices of the R.A.F. (T.F.) whenever they may be established.

Actually the idea of a Territorial Air Force is far from new. In April and May of 1914 Mr. W. E. de B. Whittaker, now Major, General Staff) wrote a series of articles in this paper on "A Reserve for the Royal Flying Corps" and on "Local Training," setting forth with his customary lucidity and peculiar humour (lie difficultie and also the great possibilities of a Territorial scheme for the R.F.C. As he rightly argued, in those days pilots were so few and far between that there was little possibility of raising the personnel of a squadron in any one town, or of establishing an aerodrome, or of raising the money to buy machines—despite the sporting offer of the city of Liverpool to raise and equip a volunteer squadron.

Many points in his article published on May 7U1, iqi/g might well be of value to-day to those who may be concerned with drafting the new Territorial scheme. And as to the general effect of a Territorial Air Force the end of the said article may well speak for itself :—

" This spreading of aviation (Territorial) into the most curious nooks of the Kingdom, to places where business is the only god, would do much to popularise aviation among the people. Familiarity with flying would teach the populace many lessons both as to the safety of aeroplanes and the instability of aviators. When a man does not understand a thing he invariably dislikes it.

General Trenchard has stated definitely that officers of the R.A.F. will be able to live, and live well, on their pay, so there need be no anxiety on that score. It will be far better to pay a small number of highly efficient

people really well, and to have a large number of volunteers who will be paid nothing at all, than to have a medium number of people all badly paid, all without enthusiasm for their work, and all as inefficient at their jobs as was the average Technical Expert during the war. C. G. G.

Personally one thinks that it might be for the good of the future R.A.F. to do so. Some of the best fighting men (in all the Services and not in the R.A.F. alone) are quite the worst officers and some are far from being gentlemen. A man may be a bully and a cad to his inferiors in rank, and yet be a first-class scrapper. Or a man may be a fine lone-hand fighter and yet hopeless as a patrol leader or an administrator. One of the bravest gentlemen whom one knew in the old R.F.C. was constitutionally unable "to command a corporal"—as a brother officer put it.

In the reorganised R.A.F. the permanent officers must combine all the qualities desirable in an officer and a gentleman. They must have bravery, but they must also have brains. And it is possible that some of the youngsters who will come out of an R.A.F. Sandhurst three or four years hence may combine the two qualities better than some of those who have distinguished themselves as fighting pilots. There is no room in a fighting service for Trade Union principles. Payment by results is the only possible method of securing efficiency. And promotion by merit is only piece-work under another name.

Equal opportunity for all is a perfectly sound theory, but a man must be fit to take his opportunity when it offers. If a proved fighting pilot cannot administer a flight or a squadron properly when he reaches the end of the period of his temporary commission, then he must get out and make way for somebody who can. That is only Nature's law of the survival of the fittest.

Again it is a matter of a man's faith in his own ability. If the proved fighting pilot, with all his war experience of how a squadron ought to be run, and of how men ought to be handled, is not prepared to back himself against the product of an R.A.F. Sandhurst, then the sooner he gets out of the Air Force the better for himself and everybody else.

#### THE RE-ORGANISATION OF THE R.A.F.

The following letter has been received :

—

Sir,—In reply to a letter signed "Audax" in your issue of June 25th, it seems to me that there is something to be said for General Trenchard's "scheme" (Programme) for asking officers to accept temporary commissions. "Audax" complains that a temporary commission of this kind would lead one who accepted it merely into a "blind alley." I suggest that there are many who would be prepared to serve for a total of four years ; one year of which would be occupied in training, while during the other three years the officer will be in all respects on the same footing as regards

## Notes on "Civil Aviation"

pay, disablement pension, etc., as the regular R.A.F. officer.

After four years he will get a gratuity of £ 300, and will have under the C. A. S.'s "scheme" (Programme) a first-class technical education at the expense of the Government. As is well known, the range of technical subjects in the Air Force is a very wide one, and a

- special feature is to be made of educating holders of temporary commissions in the future.

"Audax" should remember also that the work in the future R.A.F. will not be anything like as exacting as the war flying in the past, and will leave therefore more time and more opportunities for specialising in one of the many branches referred to above.

With regard to this second question in which he asks "why fighting pilots should be chucked out of the Service to make room for officers trained in an R.A.F. Sandhurst?" it seems to have escaped his notice that, even if all pilots in the Service on November nth, 1918, were retained, this supply would not last for ever, and that it would still be necessary to legislate for the future supply. This is what Sir Hugh Trenchard is attempting with his "scheme" (Programme) for an R.A.F. Cadet School. In his last paragraph "Audax" states that he considers a Territorial Air Force to be a sound idea. It is, I believe, the intention of the C.A.S. that officers who have held temporary commissions should form this Territorial or Special Reserve Force, and I hope very much that "Audax" is right when he says that it will attract the best of the proved fighting and civilian pilots. I myself predict a great future for a reserve force composed of officers with three or four years' experience either with the R.A.F. in the field in the past or with the Regular Air Force in the future, and consider that such a force must be more efficient than one run purely on the lines of the Army Territorial Scheme, in which an officer need have only a month's preliminary training combined with a certain number of parades in addition to the ordinary fortnight's training in each year. signed : Aileron.

July 1919, British rigid airship, the R.34, became the first flying machine ever to cross the Atlantic from east to west, between England and the U.S., and the first to make a round trip between England and North America

19 July 1919 : Air Accident : Portage la Prairie, Manitoba. aircraft type: 2 seat Thomas LFW made by Thomas-Morse A.C Corp, NY USA.

Lt. S.P Kerr - injured, Lt. W.R Cross - Killed, Mrs. S.P Kerr - Killed. Cause of accident : Stalled close to ground after engine failure. No court of inquiry, no on-site accident investigation by Air Board. No notes on 3 persons in 2 person aircraft.

23 July : ottawa canada : CIVIL SERVICE COMMISSION OF CANADA. POSITIONS VACANT.

THE Civil Service Commission of Canada hereby gives public notice that applications will be received from persons qualified to fill the following positions under the Air Board, the tenure of office to be for three years, renewable :

A Superintendent of Flying Operations, Salary \$4,500 and up.

1. A Superintendent of Flying Operations under the Air Board, at an initial salary of \$4,500 per annum ;
  1. to have charge, under executive direction, of the Flying Operations Branch of the Air Board ;
  2. to organize and direct such flying operations as may be undertaken by the Government of Canada ;
  3. to have charge of Government supply depots ;
  4. to advise as to the proper types of machines for various kinds of Government duty ;
  5. to be responsible for the purchase and storage of Government machines and equipment ;
  6. to supervise their proper up-keep and repair : and
  7. to perform other related work as required.

Candidates should have :

education equivalent to university graduation :

at least two years of flying experience in a British Air Force ;



## Notes on "Civil Aviation"

wide experience of flying various types of flying machines ;  
knowledge of numerous types of flying machines and of the theory of flying ;  
ability to select the proper type of machine for given operations ; and  
ability to organize and administer flying undertakings.

Candidates must be able and willing to fly.

A Superintendent of Certificate Branch, \$3,600 and Up.

2. A Superintendent of Certificate Branch for the Air Board, at an initial salary of \$3,600 per annum, to have charge, under executive direction, of the Certificate Branch ;  
to approve air routes and aerodromes;  
to supervise the examination and to approve of flying machines for airworthiness ;  
to supervise the examination of and the issue of certificates and licences to pilots, navigators and mechanics ; and  
to perform other related work as required.

Candidates should have:

education equivalent to university graduation ;  
at least two years of flying experience in a British Air Force, with  
wide experience in flying all types of flying machines ;  
thorough knowledge of the theory of flight,  
the design of flying machines, and  
principles and practice of aerial navigation,  
the materials entering into the construction of aeroplanes and engines, and  
the rigging and overhauling of all types of machines ;  
administrative and organizing ability.

Candidates must be able and willing to fly,

Secretary, Air Board, Salary \$3,000—\$3,720.

3. A Secretary, Air Board, at an initial salary of \$3,000 per annum, to have charge, under executive direction, of the Secretary's Branch of the Air Board ; to handle correspondence, compile and direct the publication of reports, and generally administer the routine work of the Air Board : to keep records and minutes of proceedings ; to keep in touch with aeronautical improvements, achievements, and literature ; to supervise and direct the acquisition of aeronautical information and its distribution to the members of the Air Board and to other offices ; and to perform other related work as required.

Candidates should have education equivalent to graduation from a university of recognized standing ; at least two years of office experience, one year of which should have been in connection with aeronautics ; a thorough knowledge of the various types of aircraft, and accessories ; and administrative and organizing ability. Candidates must be willing to take the air.

Medical Officer, Air Board, Salary \$2,100 per annum.

4. A Medical Officer for the Air Board,  
at an initial salary of \$2,400 per annum,  
to undertake, under the direction of the Superintendent of the Certificate Branch,  
the medical examination of candidates for and holders of pilots' and navigators' certificates ; and  
to do other related work as required.

Candidates :

should have been graduated from a medical school of recognized standing with  
a Provincial or Dominion license to practice medicine and  
have had medical experience with an Air Force Squadron.

Candidates must be willing to take the air.

General Directions.

Selections for eligible lists of applicants qualified to fill similar vacancies which may occur in future may be made from applications for these positions. Future vacancies will probably include  
an Assistant Secretary ;  
in the Certificates Branch, two Inspectors, one for Pilots and Navigators and one for Aeroplane and Mechanics ; and  
in the Operations Branch, a Flying Officer, and an Equipment and Supply Officer.

According to law, preference is given to returned soldier applicants, possessing the minimum qualifications.

Returned soldiers must furnish a certified copy of their discharge certificates, or in the case of commissioned officers, a certified statement of their military services.



## Notes on "Civil Aviation"

Application forms must be filed in the office of the Civil Service Commission not later than the 21st of August, 1919.  
Such forms may be obtained from the Secretary of the Civil Service Commission, Ottawa, the Vice-Chairman of the Air Board, Ottawa, or the Dominion-Provincial Employment Offices.

By order of the Commission,  
W. FORAN,  
Secretary.  
Ottawa, July 24, 1919. 4-1

1919 : Air Accident #2 - No records held by Gov. No investigation was %.

25 June 1919 : First meeting of the members of the Canadian Air Board. Mandate gets divided into 3 sections - all led by war hero's/ pilots headed by Lt.-Col Robert Leckie DSO, DSC, DFC : Superintendent of Flying Operations - Gov.'t Civil Air Operations Branch.

Lt.-Col. James Stanley Scott, MC, AFC : Superintendent of the Certification Branch / Lic. of aviation personnel / Lic. of Aircraft / Lic. of harbours on land & water. ( WW1 record : only at front for 4 months before invalided to Canada and posted to Camp Borden as Ofcr in charge of training)

Maj. A.M Shook, DSO : Administration of the internal office organization

Unlike the policy in the UK, where a proper and separate "Ministry" was created to govern Civil Aviation" (as a result of the need for the War Office to have a separate office for "AIR"), the Canadian Government gave "responsibility" to the "Air Board" , and they then gave it to the Minister of Militia..

August 1919 : first airplane arrives in Nanaimo, BC

August 1919 : "May Airplanes Ltd" used by detective (Campbell) to track down fugitive in a shooting.

25 August 1919 : Aircraft Transport and Travel (AT&T ) begin regular international service from Hounslow Heath to Le Bourget using war surplus DH.16 aircraft.

25 August 1919 : International Air Traffic Association (IATA) a nonpolitical and autonomous association of airline operators formed "with a view to cooperate to mutual advantage in preparing and organizing international aerial traffic", Hague.

6 companies were represented at the Hague meeting;

2 had commenced operations,

3 others had just been organized and

one was in process of formation.

The idea was to establish unity in the operation of air routes. IATA was to be nonpolitical and its members were to be entirely autonomous.

By 1929 the six original IATA members had been increased to twenty-three, and on the eve of WW2 1939 / 1940 there were thirty members.

05 September 1919 : Aeroplanes equipped with R/T are used to aid whale hunting along coast of Vancouver, BC.

06 September 1919 : Handley Page Transport : Handley Page Type O/400 Ser. No. HP-22 G-EAKE ex RAF J2252 crashes at Volla (Lillestrøm) just after T/O from Kristiania, Norway. Witness reports indicate that a "cog-wheel" in the left engine broke at just 30-40 metres altitude. after coming to rest, 2 passengers bailed out from the nose, while the other five managed to get out by themselves. the nose and parts of the wings are destroyed. repairs were done in the open air, new wings and a new nose were fitted, the work being finished in October 1919.

9 September 1919, the RAF School of Technical Training (Boys) was formed, although it did not take up its new title until 23 December.

In March 1920 the title of the school was changed again, to No 1 School of Technical Training (Boys), Halton.  
source ref : TRENCHARD'S BRATS BLOW OUT By Gp Capt W J Taylor OBE RAF DD Spt Pol 2 (RAF)

## Notes on "Civil Aviation"

Trenchard: "We must use every endeavour to eliminate accidents both during training and subsequently." [...] "this end can only be secured by ensuring that the training of our mechanics in the multiplicity of trades [...] is as thorough as it can be made. The best way to do this is to enlist the bulk of our skilled ranks as boys and train them ourselves."81

In the "Boy Mechanic Scheme" (later named the Apprentice Scheme) new apprentices were recruited at the age of sixteen. the great majority of boys come from families who are connected either with one of the services or Engineering trades.

The parents of these boys are themselves well educated and in fairly comfortable circumstances, and look to the future prospects of their sons in selecting a career for them."83

In order to ensure that the most qualified personnel were advanced, Trenchard decided to take the top three apprentices from each culminating term and award them with a cadetship at Cranwell. They would then go on to commission and become leaders within their respective fields.

Although skilled tradesmen were the backbone of the RAF, the War Office had much difficulty determining pay rates for these men. They were essentially lumped in the same category as the non-technical combatants of the army, meaning that pay was relatively standard across the board, which made it difficult to recruit skilled workers.

Therefore, in 1925 the Air Staff argued in favour of each (RAF) "service" (Air / Ground) being allowed to settle its own pay requirements, as long as it was within reason

13 October 1919 : The shipping line "S. Instone & Company" operate a de Havilland DH4A from Hounslow, the first "executive aircraft".

20 October 1919 : Airco DH.4A cabin biplane registered G-EAHG operated by Aircraft Transport and Travel crashes in the English Channel in bad weather.

01 November 1919 : the Royal Air Force College (RAFC) Cranwell was formed, and on 5 February 1920 it was officially opened  
During the initial phases of Cranwell's development Trenchard resolved to abolish the Cranwell entrance exams. Trenchard believed that these examinations did not provide an accurate assessment of the cadet's potential. Trenchard had learned this lesson personally, as he was never the most resolute pupil and rarely received top marks. Trenchard's abilities and leadership manifested in a more practical sense. Prince Albert (later George VI of Britain), among others, advised Trenchard to keep the examination process. Trenchard eventually decided in favor of the examinations on the condition that he had the option to overturn the verdict of the examiners.

06 November 1919 : Flight : the question of scrapping the Air Ministry, and with it the R.A.F. as a separate Service, has been recently discussed, but it is now definitely stated that the idea has been completely dropped, and that the R.A.F. is to continue along the lines of its present organisation. Although, as we have said, we never seriously believed that anything would come of the discussions, it is a relief to be assured that there is an end of them, and we trust most sincerely that they will never be revived again.

General Sykes to Visit Canada and America MAJOR-GENERAL SIR F . H. SYKES, Contoller-General of Civil Aviation, has arranged to visit Canada, the United States, and, if possible, Newfoundland. He expects to leave England in a few days. The visit has been in contemplation for some time, but it had to be postponed until recently on account of the pressure of business relating to civil aviation and the organisation of the Department. Even now i t will not be possible for Gen. Sykes to make anything but a relatively short stay in America and the Dominion. Gen. Sykes's mission relates to the development of international civil flying.

## Notes on "Civil Aviation"

A New Canadian Prize : IT is announced that a new £10,000 prize, open to Canadian pilots on Canadian machines, has been offered for the first successful trans-Pacific flight from Victoria to Japan.

### AVIATION IN PARLIAMENT : Royal Aircraft Factory, Farnborough

Sir W. JOYNSON-HICKS on October 29 asked the Under-Secretary of State to the Air Ministry how many men are now employed at the Royal Aircraft Factory at Farnborough ; and whether any decision has been arrived at as to the future of such factory ?

Mr. Hope : I have been asked to answer this question. The present strength of the personnel at the Royal Aircraft Establishment, Farnborough, is 2,339, of whom 237 are trade lads and 356 are women. Reductions in the staff are continuing, and it is anticipated that the strength will eventually be reduced to about 1,200. It is proposed that the factory shall be used in future as an experimental and research establishment for the investigation of aerodynamical and aero-engine problems.

Aircraft Production and Inspection Departments

Sir W. JOYNSON-HICKS asked the Under-Secretary of State to the Air Ministry whether the Aircraft Production Department and the Aircraft Inspection Department are still in existence ; and what is the number of personnel and the cost of such departments, respectively ?

Mr. Hope : The Aircraft Production Department, of which the Aircraft Inspection Directorate forms a part, is still in existence. The total headquarters staff is 1,932, the annual cost in salaries being £422,897. These figures include the staffs of the three Directorates of Supply, Research, and Inspection, together with the Accounts Branch and other common services. The staff of the Aircraft Inspection Directorate alone numbers 300, of which the annual cost is £88,507.

Route to Egypt Inquiry Committee.

Sir W. JOYNSON-HICKS asked the Under-Secretary of State for Air who are the officers making inquiry into the recent losses on the Egypt route, and if evidence is being taken on oath ?

Maj.-Gen. Seely : The members of the Committee of Inquiry referred to are as follows :—

President; Air Vice-Marshal E. L. Ellington, C.B., C.M.G., C.B.E., Director-General of Supply and Research, Air Ministry.

Mr. G. B. Cockburn, O.B.E., Head of the Accidents Branch of the Department of the Controller-General of Civil Aviation, Air Ministry.

Air Commodore H. R. M. Brooke-Popham, C.B., C.M.G., D.S.O., A.F.C., Director of Research, Ministry of Munitions.

Air Commodore A. R. Borton, C.M.G., D.S.O., A.F.C.

The last-named officer has had great experience of the work to be investigated by the Committee. He has flown in a Handley-Page machine over the route to India and has surveyed part of the route on to Australia. The Committee is not taking evidence on oath.

#### RAF Branches :

1. Flying Branch
2. Administrative
3. Technical Branch : Pilot Officers to be Flying Officers, without the pay and allowances of that rank
4. Medical Branch
5. Dental Branch
6. Chaplains' Branch

11 December 1919 : Churchill and Trenchard present to Parliament a plan outlining proposals for deploying and financing the Air Force. Here is the original, official government publication, bearing a three-paragraph introductory note from Churchill as Secretary of State for Air dated 11 December 1919. The Memorandum clearly conveys Churchill's and Trenchard's struggle to firmly establish and viably sustain the fledgling service: "The problem of forming the Royal Air Force on a peace basis differs in many essentials from that which confronts the older services. The necessities of war created it in a night, but the economies of peace have to a large extent caused it to wither in a day, and we are now faced with the necessity of replacing it with a plant of deeper root"

- See more at: <https://www.churchillbookcollector.com/pages/books/001500/winston-s-churchill/permanent-organization-of-the-royal-air-force-note-by-the-secretary-of-state-for-air-on-a-scheme#sthash.vXcDoqGo.dpuf>

11 December 1919 : Airco DH.4A G-EAHF operated by Aircraft Transport and Travel crashes at Caterham en-route from Hounslow to Le Bourget killing the pilot and passenger.

27 December 1919 : First flight of Boeing Model #6, B-1 Flying Boat (similar to Curtis HS-2L) at Lake Union, Wa. USA.

December 1919 : Canadian News papers publish the Canada Air Board issued "Air Regulations " which come into effect 17 January 1920.

## Notes on "Civil Aviation"

December 1919 : RAF strength is now 12 Sqns, 31,500 total persons



"Flight" Copyright

Vickers Vimy "Commercial" Passenger aeroplane - 2x Rolls-Royce Engines

British civilian flying, as regards the running of regular services over specified routes, commenced in 1919.

1919 : Aircraft Transport and Travel "A.T.T." begins regular service between London and Paris using converted WW1 aircraft.  
Colonel Frank Searle

Partly owing to the uneconomical nature of the machines, and partly owing to the lack of any Government assistance, this firm had to cease operations, but not before a very great deal had been learned about the conditions to be met with in running such a service, and, incidentally, having proved the feasibility of keeping to a fixed time-table and flying with good regularity, coupled with safety to passengers.

1919 : Handley Page Transport, Ltd. operates a London-Paris route. During 1919-20, a service was also run between London and Brussels and London and Amsterdam. These "services" were run without Government assistance in competition with foreign subsidised services. Handley Page Ltd started conversion of its O/400 and V/1500. The first aircraft to be converted were four O/400s with the military identities: D8350, F5414, F5417 and F5418. They were stripped from their military equipment and then wicker seats were installed.

In 1922 - three British firms were operating subsidised services on the London-Paris route, but this resulted in a great deal of undesirable competition between the British firms, and caused a certain amount of overlapping and duplication of ground organisation.

A few months ago it was decided to allocate to each of the three British operational companies a separate and distinct route:

Handley Page Transport, Ltd., operate the London-Paris service ;  
Instone Air Line. Ltd., operate the London-Brussels-Cologne service,

## Notes on "Civil Aviation"

Daimler Airway operate the Manchester - London - Amsterdam service, the latter to be extended to Berlin as soon as the necessary arrangements can be made.

### The Daimler Airway

Colonel Frank Searle, formerly with Aircraft Transport and Travel

Major Woods Humphrey, formerly with Handley Page, Ltd.

The Daimler Airway is a branch of Daimler Hire, Ltd.,

high performance D.H-34's, with Napier " Lion " engines, Seats for ten passengers, proved economical to run on daily service between London - Manchester and London (Croydon) - Amsterdam.

### Handley Page Transport, Ltd.

With the exception of a short interruption in 1921, due to the impossibility of running unsubsidised services in competition with French subsidised ones, Handley Page Transport, Ltd., have operated the London-Paris service since 1919.

Mr. E. Cogni, Manager;

12 passenger Handley Page H.P. W-8B's with two Rolls- Royce " Eagle " engines, chosen because the firm is of the opinion that a twin-engined machine reduces to a minimum the risk of forced landings on unsuitable ground, the one engine being sufficient to enable the machine to reach a good landing ground, even if not able to reach its destination.

Unless the H.P. W-8B carries full load, it should be able to complete its journey on one engine.

1923 : Handley Page Transport, Ltd. places the 16 passenger H.P. W-8C into service.

### Instone Air Line, Ltd.

1918 : Messrs. S. Instone and Co., Ltd., purchase a D.H.4A for the purpose of rapid communication between their various offices in England and on the Continent. This marked the "beginning of this firm's interest in aviation, and a number of different machines were gradually acquired, and used on the London-Paris service.

April 1922 : Messrs. S. Instone and Co., Ltd. (Sir Samuel Instone, chairman) was made into a limited company under the title Instone Air Line, now operating a daily London - Brussels - Cologne - Brussels - London service.

Several types of machines are operated,

D.H.34, with Napier " Lion " engine,

Vickers Vimy- Commercial, with two Rolls-Royce engines

Vickers Vulcan eight-seater, with one Rolls-Royce " Eagle " engine.

**1919 : EDUCATIONAL DEVELOPMENTS IN THE DOMINION OF CANADA**

Certain educational activities are common to most, if not all, of the Provinces of the Dominion; and these will be considered in their general listings before the local and individual problems of the several Provinces are taken up.

Chief of these general movements are the following:

According to immigration statistics, Canada has within the past 10 years received waves of immigration from 26 distinct racial entities.

**VOCATIONAL WORK FOR RETURNED SOLDIERS.**

The care of the returned Canadian soldier has devolved entirely upon Military Hospitals (Commission established and given extensive powers by successive orders in council. This commission works together with a committee of both houses of the Canadian.

Parliament in the training and reeducation of wounded, disabled, and convalescent soldiers. In the system provided, the training for new occupations of men who can not resume their former occupational vocational

reeducation is the phase of deepest educational significance. Under this head, and responsible to the commission first named, nearly every Province has the following organizations:

1. A Provincial Disabled Soldiers' Training Board, which determines who are fit subjects for vocational reeducation.
2. A body having generally advisory powers for securing the coordination of local efforts and the cooperation of educational institutions.
3. Vocational officials in immediate charge of work in each locality under the Vocational Secretary of the Dominion, with headquarters at Ottawa.
4. Various organizations, such as the Returned Soldiers' Employment Commission) which have charge of placing the men in bread winning occupations.

The efficiency with which all these agencies cooperate necessarily varies widely in the several Provinces; perhaps the finest illustration of the practical working of the general plan is to be seen in the western Province of Alberta, from which many of the first enlistments in the Canadian expeditionary force came.

At the Military Convalescent Hospital at Ogden, military organization and discipline prevail. In addition to systematic treatment involving occupational therapy of the most modern type, specialized vocational reeducation is given in:

- (1) Commercial courses of six months;
- (2) Instruction of disabled soldiers, foreigners who had enlisted in the Canadian forces, in English;
- (3) GIN-service examination courses;
- (4) Manual arts;
- (5) Gardening and poultry raising;
- (8) Industrial trades along the line of the vocational survey of the Province of Alberta projected just as the war broke out, with instruction at the Provincial Institute of Technology and Art at Calgary, organized as a link in the general system of public instruction in Alberta, and for the present turned over exclusively to disabled soldiers. Many problems of vocational training are here being worked out with remarkable success. The caliber of the students and the relation between them and the educational authorities may be seen in the fact that a students' council at the institute has powers of self government, works out programs of study, recently voted for an increase in daily hours of work, and has frequently been asked for advice on the contents of courses.

In March, 1918, the vocational training branch of the Provincial Invalid Soldiers' Commission had under its instruction more than 3,000 returned soldiers.

Dominion-wide interest in this world problem did not cease with the cessation of hostilities.

At the convening of the Canadian Parliament in February, 1919, it was announced in the speech from the throne that bills would be submitted for the further promotion of vocational education in all its phases, and that a recent order in council had provided substantial increase of vocational pay and allowances to returning soldiers while undergoing such re-education.

Perhaps the most vital bond of union between the Provinces from the point of view of teaching is the Dominion Educational Association. The Dominion Educational Association includes representatives from each Province, meets annually in November, in Ottawa, and constitutes a clearing house for the interchange of educational ideas, besides contributing substantially to the growing federalistic consciousness.

A few of the salient subjects discussed at its 1918 meeting :

- a) The Relation of "Technical" to "Complete Education"

## Notes on "Civil Aviation"

- b) Education for the New World after the War
- c) The Returned Soldier What Can We Do for Him

### CONTINUATION SCHOOLS.

The continuation schools have grown steadily during the past two years. In spite of difficulties of accommodation and equipment, the favoring regulations and the liberal system of provincial grants made to this type of school have advanced their usefulness, though with the confusion incidental to the war only the largest centers have as yet such schools in full operation. The inspector of the district which enrolls the largest number of such schools advocates making obligatory that every continuation school employing two teachers and every high school having four teachers or less shall establish departments of agriculture and household economy giving a two year course and winter courses in each; that schools with a staff of more than six teachers shall establish departments of technical training; and, household economy; provision should be made for training a sufficient number of the best available teachers, the burden of expense being distributed over the municipalities that derive benefit from such a school, and attendance of pupils for the greater part of the time between the ages of 14 and 17 being made compulsory.

For the past two years the decrease in the attendance of boys upon the continuation schools has been noticeable, more particularly among the first-year pupils, attributable to the great scarcity of labor on the farms, necessitating the work of the larger children at home.

In industrial centers, the decrease is due to the attraction of high-school boys and girls to employments paying high wages. According to the report of the inspector of the district, which shows more distinctively rural allocations?

When first established, "continuation schools" were expected to provide secondary education for the youth of the rural and village communities of the Province, and so had a strong tendency toward training for country life by means of slaking agriculture one of the chief subjects of study. Unfortunately, the continuation schools have not to any great extent fulfilled such expectations.

In rural or village communities the continuation schools are now simply "high schools" providing:

- i. courses similar to those in the city high schools
- ii. courses fitting youths for the teaching profession, and
- iii. courses for entrance in the universities and professional colleges.

### INDUSTRIAL AND TECHNICAL EDUCATION.

Full development of the various types of schools contemplated by the Industrial Education Act, 1911 is interrupted by WW1, Post WW1 representatives of every type provided for by the Industrial Education Act, 1911 have been established:

- i. Day schools, including general industrial schools,
- ii. Technical high schools and high-school courses,
- iii. Part-time cooperative industrial courses for apprentices actually employed,
- iv. School and courses for instruction in the fine and applied arts; and
- v. Night schools distinctively for adult workers.

The needs of the war have brought special emphasis to bear upon the instruction of apprentices.

Public-spirited employers in some places have offered tangible inducements to attend classes in mechanical drawing and shop mathematics, and in one instance managers allow one month to be deducted from the year's apprenticeship for a faithful winter's work in night school classes upon these subjects.

War needs have also brought to the front the value of classes for women in domestic science.

Perhaps the greatest progress in industrial and technical education has been made in the development of the "day schools" which reach boys and girls under 14 who can not be given such training in the public schools, and who have not the maturity of mind to do successful night school work.

The INDUSTRIAL AND TECHNICAL branch of education has also received great stimulus from the attendance of returned soldiers in trade and technical classes, this having been affected by arrangements with the Dominion agencies already mentioned, which used the already established courses for the re-education of disabled soldiers.

## Notes on “Civil Aviation”

-The farthest reaching piece of legislation relative to higher education in the Dominion was enacted in 1917 by the assembly of Manitoba *on the basis of the bill submitted by the minister of education*, re-modelling the constitution of the University of Manitoba., *providing for a board of governors of nine members vested with full power over the financial affairs of the university and the final decision of all matters of academic policy.*<sup>140</sup>

Source ref: US DEPARTMENT OF THE INTERIOR - BULLETIN, 1919, No. 49 “EDUCATION IN PARTS OF THE BRITISH EMPIRE” - US BUREAU OF EDUCATION BIENNIAL SURVEY OF EDUCATION 1918-1818.

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<sup>140</sup> US DEPARTMENT OF THE INTERIOR - BULLETIN, 1919, No. 49 “EDUCATION IN PARTS OF THE BRITISH EMPIRE” - US BUREAU OF EDUCATION BIENNIAL SURVEY OF EDUCATION 1918-1818.



**1919 : ROYAL COMMISSION ON INDUSTRIAL TRAINING AND TECHNICAL EDUCATION**

**ROYAL COMMISSION ON INDUSTRIAL TRAINING AND TECHNICAL EDUCATION, 1910**

The appointment by the Dominion Government of the Royal Commission on Industrial Training and Technical Education in 1910, coincided with or possibly resulted from an active interest in vocational education throughout the whole Dominion, and marked the beginning of the present development. The commissioners, after carefully studying the existing conditions and requirements in Canada and inspecting the work being done in the United States, Great Britain, and parts of Europe, recommended a development policy and a complete system of secondary vocational education for Canada. This system, while retaining provincial control of education, provided for federal, provincial, municipal, and private financial contributions and close cooperation between schools and industry. technical education consisting of the craft schools was present in Canada at this time.

The 2 types of work suggested for urban communities were as follows:

Division "A" For those who are to continue at school"

- I. Intermediate industrial classes (or schools).
- II. Co-ordinated technical classes (or schools).
- III. Technical high schools.
- IV. Apprentices' schools.
- V. Industrial and technical institutes.
- VI. Technical, home economics and fine arts colleges.

Division "B" For those who have gone to work:

- I. Continuation classes (or schools).
- II. Co-ordinated technical classes (or schools).
- III. Middle technical classes (or schools).
- IV. Apprentices' classes (or schools) in workshops.
- V. Industrial and technical institutes.
- VI. Correspondence-study courses.

**DOMINION OF CANADA - TECHNICAL EDUCATION ACT, 1919**

One result of the Treaty of Versailles requiring Vocational and Technical training as one of its' clauses, was the "Technical Education Act" was enacted by the Parliament of the Dominion of Canada in July, 1919. "it is realized that if Canada is to keep up in the commercial race the technical school accommodation must be increased..."

"There are those who would restrict the work of technical education to such instruction or training as would improve the efficiency of the boy or girl as a productive machine. The adoption of such a policy would create an army of slaves instead of an army of happy, industrious citizens. It has, therefore, been decided that the aims of vocational education in Canada shall, as far as possible, be those laid down by the Commission. On this basis the dominant purpose of any course of vocational education shall be to train for citizenship, the fitting for useful employment being regarded as the crowning element in the educational system. Before

starting on a definite course of vocational training, the pupil should be aided and encouraged in finding his own aptitudes and in selecting a vocation for which his native ability is best suited. In accordance with the aims set forth above, emphasis should be placed on the development of character and ability to co-operate with others. This involves the development in the individual goodwill toward others, loyalty to the community, and a definite sense of responsibility for the maintenance and improvement of organized society."

## Notes on "Civil Aviation"

technical education has consisted of "practical and applied" subject matter. Originally practical is known as manual or "shop" training,

Technical education" and "vocational education" are sometimes thought to refer to the same thing since early in this century technical education included most courses that entailed manipulation of materials or mechanical equipment and the applied principles of engineering. This could be for general education or for career preparation and be found within secondary education and post-secondary education. Technical education courses teach: properties of materials and components; methods of fabricating and constructing useful items from such material and components; the identification and proper use of tools for professional and recreational purposes; basic theory and principles of various technologies, often linking instruction with other subjects such as physics and chemistry; analysis of industrial and manufacturing systems and methods; and the application of technology. Vocational education, now usually refers to a multi-year program or a series of courses providing specialized instruction in a skill or trade intending to lead the student directly into a career or apprenticeship program based on that skill or trade.

Influenced by technical education curricula in industrialized countries of Europe and the US, and concerned with consistency in technical education across the country, the federal government established a Royal Commission on Industrial Training and Technical Education in 1910. an influential piece of legislation arising from these findings was the Ontario Industrial Education Act of 1911. This legislation established a policy towards the implementation of technical education programs in general and formalized manual training as part of the Ontario curriculum.

The largest expenditure of federal funds for education came through the Technical and Vocational Training Assistance Act of 1960, designed to help the provinces replace and augment equipment in secondary schools, and to construct new vocational high schools, institutes of technology and adult-training centres.

Although technical education programs are offered at some Canadian universities as part of a Bachelor of Education degree, such programs became primarily intended to instruct "prospective teachers" in the methods and content necessary to teach technical education subjects in secondary schools.

From its origins in manual training "shop" and industrial arts, technical education has consisted of practical and applied subject matter. Source ref : <http://www.thecanadianencyclopedia.ca/en/article/technical-education/>

### ROYAL MILITARY COLLEGE—REPORT OF THE BOARD OF VISITORS, 1919.

The Board assembled at the Royal Military College on Monday, May 19, 1919.

Chairman—Hon. Colonel Sir R. A. Falconer, K.C.M.G., M.A., LL.D., D. Litt. - R. A. Falconer = President of University of Toronto - effort made to remove trades / ground engineers from university program - RMC influence?

"Technical" and "industrial" are thus included in "vocational" education.

The latter term, being the most comprehensive and the one generally used in the United States, will in future be used to include all work to be promoted under the provisions of the Act. "Technical Education," as defined in the Act, "means and includes any form of **vocational technical or industrial education** or instruction approved by agreement between the Minister of Labour and the Government of any province as being necessary or desirable to aid in promoting industry and the mechanical trades, and to increase the earning capacity, efficiency and productive power of those employed therein. According to this definition, technical education may include any form of education or training which will fit a boy or girl for useful employment in any chosen vocation. The vocations for which education and training have been established are: (1) the professions (involving a degree), (2) teaching (elementary and high school), (3) agriculture - a federal grant has been given for this work. In accordance with the above, all work of college grade (courses leading to a degree), the training of nurses, the training of teachers for elementary and high schools, and agricultural education have been excluded from the benefits of the Act. The work of the elementary schools and the academic courses in high schools, including manual training, are excluded because they are not vocational, and secondly because they have been long established and provided for. With the above noted classes of education work eliminated, the field for vocational training is fairly well defined. Source ref: Labour Gazette : January 1921 pg 51-53.

### Ontario

Ontario's program of vocational education is the most diversified and highly organized in Canada. Cultural and academic subjects are given first place in vocational schools, and no attempt is made to produce skilled workers in any branch of industry. A broad

## Notes on "Civil Aviation"

foundational training is aimed at, rather than specialized training in any one branch of industrial or commercial life. The schools endeavour to maintain close contact with industry through evening classes, part-time and continuation classes, employment service for graduates, and occupational information. Apprenticeship is encouraged, and this year a provincial apprenticeship council for the building trades was established in Toronto.

Teacher-training is centralized in the Training College for Technical Teachers at Hamilton, but the staff of the college gives instruction to evening school teachers in various centres, during the winter months.

The College of Art, in Toronto, serves the whole province, while some of the larger technical schools have well organized art departments.

Commercial courses in the province vary from two-year courses in the high schools, which are not recognized as vocational, to the five-year courses of the Toronto High School of Commerce. Most vocational commercial courses cover three years' work and are organized as branches of the technical schools.

The larger cities have separate vocational or technical schools, but the smaller places usually organize vocational departments in connection with the other departments of a composite or cosmopolitan high school. The vocational work is divided into five branches: 1. Technical and industrial, 2. Commercial, 3. Home Economics, 4. Applied Art, 5. Agricultural. Federal grants are not paid on the agricultural work.

Vocational education in Ontario had become fairly well established by 1919. Day classes were operated in eleven cities and evening classes were carried on in thirty-six municipalities. In 1927, day schools were established in thirty-two municipalities, and evening classes were operated in fifty-seven centres. The enrolments in 1927 were 21,684 for day schools and 37,977 for evening classes. The total expenditures on all types of secondary vocational education in the province exceed \$4,000,000 annually. During the three-year period from 1920 to 1922 the expenditures on new buildings exceeded \$5,000,000, and the building program has not slackened since. The provincial government each year earns considerably more than the amount available under the Technical Education Act.

### Alberta

A good beginning in vocational education had been made by the Province of Alberta before 1919. A pre-vocational school in Calgary provided industrial, commercial, and home economics courses in grades 7, 8 and 9. A technical school in Edmonton offered four types of work, viz., pre-vocational, industrial, technical matriculation, and special courses. Commercial schools were operated in three centres and evening classes were conducted in four municipalities.

Plans were completed in 1919 for the erection of the Provincial Institute of Technology and Art in Calgary, to take the place of the classes which had been carried on, since 1916, in temporary quarters. The new building was completed in 1922 and the work in this institution has grown steadily. A large wing was added to the shop buildings in 1926 and all classes are filled. The work is all of an industrial nature. The Institute provides fulltime two-year courses, short-term winter courses, summer courses, and evening courses, for pupils from all parts of the province. It also conducts correspondence courses in stationary engineering and mining.

Day school work in Alberta, although slightly increased, is still confined to the four cities mentioned above. Evening classes have been operated in as many as twenty different centres, but owing to a period of depression, particularly in the mining districts, the classes have been discontinued in a number of centres. Nine municipalities were carrying on evening classes in 1927, with a total enrolment of 2,107 pupils. The total enrolment in day classes was 2,034.

Conditions have greatly improved during the past two years and the outlook for the future is very hopeful.

Engineering education and the professional training of teachers, doctors, dentists, etc., which, while vocational, are a part of college or university work and are not usually referred to as vocational education.

Manual training and domestic science, which were pioneer subjects in the development of secondary vocational education, are not dealt with because these subjects are now established parts of the academic branch of school work.

Technical education programs were administered separately from other parts of the school curriculum. After 1914, they were under the administration of the Director of Technical Education. The Technical Branch was responsible for technical training in public high schools, including vocational, home economics, and agricultural programs. The branch was also responsible for liaison with the Department of Agriculture, which offered vocational training programs at its college at Olds. The Director of the Technical Branch became the Principal of the Provincial Institute of Technology and Art at the time that this institution was established in 1916. The school operated as a division of the department until its transfer to the Department of Advanced Education in 1971. The Technical Branch was responsible for the administration of Dominion/Federal-Provincial training programs. In 1937, the branch was renamed the Canadian Vocational Training Branch. In 1959, the branch was renamed the Division of Vocational Education. In 1960, a second provincial institute of technology in Edmonton was authorized by the Minister. The first institute was renamed the Southern Alberta Institute of Technology. The new institute was named the Northern Alberta Institute of Technology.

the Federal Government imposed:

## Notes on "Civil Aviation"

a system of education on the provinces without adequate study.

a system of education on the provinces without the constitutional power to enforce its program.

Source Ref: Source: Labour Gazette - November 1927 Pages: 1180-1186

1891 one of the first technical schools in Canada opens - offering evening classes only, in Toronto by an independent board .  
Historically, vocational-technical education has not been a high priority area for the typical education reformer - he Smith-Hughes  
National Vocational Education Act of 1917 was an act of the United States.

### 1919 - 1925 : LLOYD'S REGISTER

- A. founded in London in 1760 to examine merchant ships and 'classify' them according to their condition.
- B. In the 1900s, LR brought its expertise to bear in other industries, in particular the energy sector.
- C. In the 1900s, LR widened its services to include management systems certification.
- D. Immediately after World War I, Lloyd's Register was approached by the Society of British Aircraft Constructors and asked to take on aircraft inspection. At that time aircraft were built of wood and canvas and the Committee declined.
- E. 1930, the General Committee appointed an Aviation Committee and aviation surveyors. They inspected RAF training aircraft and private aircraft, including the Duchess of Bedford's airplane, The Spider, which she piloted to South Africa and back.
- F. In the early '30s as the commercial air industry began to grow, it was felt that a governmental authority should handle aircraft inspection and the Civil Aviation Authority was born out of the Air Ministry. (Lloyd's Register: From Coffee House to Post-Modernist building, 29 June 2015 [www.lr.org/en/\\_images/213-35658\\_31-lloyds-register-pics.pdf](http://www.lr.org/en/_images/213-35658_31-lloyds-register-pics.pdf))

1919 : Engineering Institute of Canada : Works Cited :  
Production :

Inspection. Inspection of Airplanes at Romorantin, France, Earl E. Ives. Mech. Eng., vol. 41, no. 10, Oct. 1919, pp. 819-820.  
American built De Havilland 4's were shipped to Romorantin in semi-assembled condition and there were uncrated, set up, tested and flown to the battle line. Work of inspectors involved in these operations is taken up.

Standardization. Standardization in Aircraft Construction (Normung in Luft-fahrzeugbau). Zeitschr. f. Flugtechnik und Motorluftschiffahrt, vol. 10, nos. 5-6, Mar. 29, 1919, pp. 45-61. Standards for bolts, screws, cables, sheets, tubes, etc.

TRANSATLANTIC FLIGHT : Airship, Trans-Atlantic Flying. Notes on Long Aerial Flights (En marge des raids aeriens), M. Thebault. Aeronautique, vol. 1, no. 1, June 1919, pp. 11-15, 5 figs. Technical study of problem of trans-Atlantic crossing in airship.

Air Navigation Regulations.

Convention relating to International Air Navigation.

Aeronautics, vol. 17, nos. 302, 303, 304 and 305, July 31, Aug. 7, 14 and 21, 1919, pp. 124-127, 145-147, 170-173 and 197-198, 4 figs.

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Aug. 14: International aeronautical maps and ground markings; collection and dissemination of meteorological information.

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See also Aircraft Ministry.

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## Notes on "Civil Aviation"

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## Notes on "Civil Aviation"

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## Notes on "Civil Aviation"

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THE JOURNAL OF

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### The Salary Situation

Members throughout Canada are eagerly awaiting news regarding what the Dominion Government proposes in connection with increasing the salaries of engineers and technical men employed by the Government. This is a matter which concerns every member of The Institute, either directly or indirectly, and is also one in which every member can give assistance. In the last number of The Journal, following the direction of Council, a notice was inserted asking every member to use his influence in this connection. From that time up to the present no definite information has been received as to what the Government proposes apart from the fact that an announcement has been made that a Bill is to be brought before the House embodying the recommendation of the experts of the Civil Service Commission.

As an evidence of the interest which this question has aroused, practically every branch has notified headquarters that local members of Parliament have been interviewed and their promise of favorable consideration for support to the engineering profession has been received.

There is still a lot to be done.

Every branch, besides securing influence of the members of the Federal House representing its district, has an opportunity of enlisting the support of the public through the press, for no fair-minded editor, on being presented with the facts, would refuse to lend his support to such a worthy cause.

In connection with this question, the chairman of a committee on salaries in one of the branches writes that

he has never seen a committee take up a problem with such earnestness and such enthusiasm, so that successful results are expected.

The problem of increased salaries for technical men involves more than a mere increase in monetary award, as a failure, at this time, to secure such a result means a continuance of the lack of recognition of the value of engineering training and knowledge to the country. It means, further, the continued humiliation of having highly educated, trained, technical men, in positions of responsibility, earning less than the mechanic or foreman under their charge. Surely we are not going to allow this condition to continue.

So strongly do some of the members of Parliament feel on this subject that a number of men have pledged themselves to do their utmost to secure a more equitable basis of remuneration. These supporters are being supplied with information by a committee of the Ottawa Branch and are being well-grounded in the merits of our case.

Whatever differences of opinion members may have on questions of legislation and other subjects, it is universally agreed that here is one problem upon which all can act in hearty accord and to which we should all direct our efforts.

#### Engineers to the Fore

In an account of an address on water power projects given by K. H. Smith, A.M.E.I.C., Secretary-Treasurer of the Halifax Branch before the Commercial Club of Pictou, Nova Scotia, the New Glasgow Enterprise, which devoted several columns to an account of Mr. Smith's address, stated that what most impressed the audience was the fact that people are just beginning to realize that the brainy engineer with a vision will be far more valuable than most other professions during the coming era. The nations of the world are looking forward to material progress to aid them to recover from the losses of the war and no body of men is more greatly needed than engineers to carry on this work.

If, in the face of a tribute such as this, popular appreciation existed to such an extent that the engineer might be enabled to collect at least a reasonable share of the amount he earns, it would give rise to a condition of affairs towards which we have been looking for many years and which it is hoped may before long be attained

## AN ACT RESPECTING THE ENGINEERING PROFESSION

In accordance with a resolution passed at the Annual Meeting in Ottawa on the 12th of February, 1919, providing for the formation of a special committee composed of one delegate appointed by each branch, this committee met at ten o'clock on the morning of Saturday, April 5th, with C. E. W. Dodwell, Chairman, and A. Surveyer, Secretary.

The concrete result of the labours of this committee after three sessions daily for five days, is a tentative Bill which is printed below for the information of members of The Institute. A ballot will be issued to all the members in accordance with the resolution calling for its approval, or otherwise, by the corporate membership.

### THE PROPOSED ACT.

Whereas it is considered advisable to establish by legislation the qualifications necessary to permit persons to act or practise as Professional Engineers.

Now, therefore, His Majesty, by and with the advice

and consent of the Legislature of the Province of

, enacts as follows: "â€" â€"

#### Short Title

1. This Act may be cited as the " Engineering Profession Act."

#### Interpretation

2. In this Act, unless the context otherwise requires, the expression : "â€"â€"

(a) " Professional Engineer " means any person registered as a Professional Engineer under the provisions I of this Act.

(6) The practice of a Professional Engineer within the meaning of this Act embraces advising on, making measurements for, laying out and the design and supervision of the construction, enlargement, alteration, improvements or repairs of public and private utilities, railways, bridges, tunnels, highways, roads, canals, harbours, harbour works, river improvements, light-houses, wet docks, dry docks, dredges, cranes, floating docks, and other similar works, steam engines, turbines,

pumps, internal combustion engines, and other similar mechanical structures, air ships and aeroplanes, electrical machinery and apparatus, chemical and metallurgical machinery, and works for the development, transmission or application of power, mining operations and apparatus for carrying out such operations, municipal works, irrigation works, water works, water purification plants, sewerage works, sewage disposal works, drainage works, incinerators, hydraulic works, and all other engineering works. The execution as a contractor of work designed by a Professional Engineer, or the supervision of the construction of work as a foreman or superintendent, or as an inspector, or as a roadmaster, track master, bridge or building master, or superintendent of maintenance shall not be deemed to be the practice of a Professional Engineer within the meaning of this Act.

(c) " The Association " means the Association of Professional Engineers of the Province of

(d) " Council " means the Executive Council of the Association.

(e) " President " means the President of the Association.

(f) " Registrar " means the Registrar of the Association.

(g) " The Secretary " means the Secretary-Treasurer of the Association.

(h) " Board " means the Board of Examiners of the Association.

The Association of Professional Engineers of the Province of

3. (a) All persons registered as Professional Engineers under the provisions of this Act shall constitute the Association of Professional Engineers of the Province

of , and shall be a body politic and

corporate, with perpetual succession and common seal.

(b) The seat of the Association shall be at

4. The Association shall have power to acquire and hold real estate not producing at any time an annual income in excess of ten thousand (\$10,000.00) dollars, and to alienate, mortgage, lease or otherwise charge or dispose of such real estate or any part thereof as occasion may require; and all fees, fines and penalties receivable and

recoverable under this Act shall belong to the Association.

5. The Association may pass By-laws not inconsistent with the provisions of this Act for: "â€"

(a) The government, discipline and honour of the Members.

(6) The management of its property.

(c) The maintenance of the Association by levying fees not in excess of \$5.00 per annum.

(d) The examination and admission of candidates to the study and practice of the profession.

(e) All other purposes reasonably necessary for the management of the Association.

6. All By-laws or amendments thereto shall become effective only after ratification by two-thirds majority of the votes received from the Members of the Association in good standing.

#### Who May Practise

7. (a) Only such persons who are Members of the Association hereby incorporated and registered as such under the provisions of this Act, or who have received a license from the Council of the Association as hereafter provided, shall be entitled, within the Province of , to take and use the title of " Professional Engineer " or any abbreviation thereof, or to practise as a " Professional Engineer."

(b) Any person residing in the Province of

at the date of the passing of this Act, who is at that date and has been for five years previously practising as a Professional Engineer shall be entitled to be duly registered as a Member of the Association without examination, provided that such person shall produce to the Council, within one (1) year of the passing of this Act, satisfactory credentials of having so practised.

(c) Any person who may come to reside in the Province of and who at that time is a duly

412

JOURNAL OF THE ENGINEERING INSTITUTE OF CANADA

registered Member of an Association of Engineers similarly constituted of any other Province of the Dominion of Canada, may become a duly registered Member of the Association without payment of fee for that year providing he shall produce to the Council a Certificate of Membership in good standing in such Province, and an application for Transfer of Registry endorsed by the Registrar of the Province in which he lately resided.

(rf) Any person not otherwise qualified as herein-before mentioned, residing in the Province of

and who may desire to become a registered member of the Association shall make application to the Council, and shall submit to an examination, or shall submit credentials in lieu of examination, whichever the Council may decide, and shall be admitted to Registry as a Member of the Association on payment of prescribed fees after the Council shall have certified in writing that such examination or credentials have been found satisfactory to it.

(e) Any person not residing in the Province of , who is a registered member of an Association of Engineers similarly constituted of any other Province of the Dominion of Canada, shall obtain from the Registrar a license to practise as a Professional

Engineer in the Province of upon production of

evidence of his registry in such other Province, and upon payment of a fee of one dollar. In the event of such person being unable, by reason of emergency or neglect on the part of the Registrar or for any other good and sufficient reason, to obtain such license within three (3) months of his making application therefor, he shall be entitled to practise as a Professional Engineer in the Province for such period of three months without holding such license.

(f) Any person who is not a resident of Canada, but who is a Member of any engineering or technical organization or society of standing, recognized by the Council, may obtain a license to act in an advisory or consultative capacity to a registered member of the Association.

(y) Any person who is employed as a Professional Engineer by a public service corporation, a private corporation, public utilities or Government department, whose business is normally carried on in two or more of the Provinces of Canada, and who is by reason of his employment! required to practise as a Professional Engineer in other Provinces than that of his residence, may so practise in the Province of , without holding a non-resident license, or payment of fee, providing such person can on demand of the Council produce credentials satisfactory to the Council showing that he is a registered member of an Association of Engineers similarly constituted of some other Province of Canada. It shall be the duty of such person to produce such credentials whenever



so required by the Council.

(/i) Any Professional Engineer who is a resident of some other Province of Canada in which there is no Association of Engineers similarly constituted, may obtain a license to practise, subject to the discretion of the Council.

(i) Assistants working under the direct supervision of a Professional Engineer and not taking responsibility for their work other than to their direct superiors shall not

be deemed to be practising as Professional Engineers when so engaged.

(J) The provisions of this Act shall not apply against any person employed in actual service in His Majesty's Naval, Military or Aerial Service.

(k) In the case of Engineers who were practising in

the Province of , and who have been accepted

for overseas service in the present war in the forces of Great Britain, or any of her Allies, shall on their return to Canada be entitled to all the rights and privileges conferred under sub-section " b " of Section 7.

#### Partnership

8. In the case of two or more persons carrying on practice as Professional Engineers in co-partnership only such members who are registered or licensed under this Act, shall individually assume the function of a Professional Engineer. A firm as such cannot be deemed to be a Member of the Association or be licensed to practise.

#### Administration

9. (a) There shall be a Council of Management of the Association to consist of a President, Vice-President

and Councillors, to be elected by

the Association, and hold office as hereinafter provided. All Members of the Council shall be registered under the provisions of this Act.

(b) The President shall be elected annually and shall hold office until his successor is elected. He shall act as presiding officer at the meetings of the Council and of the Association, voting only when the votes are evenly divided. On retirement he shall hold office as Councillor for the next year succeeding.

(c) The Vice-President shall be elected annually and shall have all the powers of the President during the absence

of the latter.

(d) Councillors shall be elected for the

first year after the coming into effect of this Act; thereafter

only Councillors shall be elected each year.

The Councillors receiving the largest

number of votes at each annual election, after the first election, shall act for two years.

#### Suspension for Misconduct

10. (a) The Council may, in its discretion, reprimand, censure or suspend or expel from the Association any Engineer guilty of unprofessional conduct, negligence, or misconduct in the execution of the duties of his office, or convicted of a criminal offence by any Court of competent jurisdiction.

The Council shall not take any such action until a complaint under oath has been filed with the Registrar and a copy thereof forwarded to the party accused. The Council shall not suspend or expel an Engineer without having previously summoned him to appear to be heard in his defence, nor without having heard evidence under oath offered in support of the complaint or on behalf of the Engineer. The Council shall have the same powers

#### JOURNAL OF THE ENGINEERING INSTITUTE OF CANADA

413

as the Court to compel witnesses to appear

and to answer under oath in the manner and under the

penalties prescribed by the code of The

President of the Council or person acting as such in his absence, or the Secretary, is hereby authorized to administer oaths in such cases. All evidence shall be taken in writing or by a duly qualified stenographer.

(6) Any Engineer so expelled or dismissed may, within thirty days after the order or resolution of suspension or expulsion, appeal to a judge of the Supreme Court from such order or resolution, giving seven days' notice of appeal to the Council, and may require the evidence taken to be filed with the proper officer of the Court, whereupon

such judge shall decide the matter of appeal upon the evidence so filed and confirm or set aside such suspension or expulsion, without any further right of appeal; and if the suspension or expulsion be confirmed, the costs of such appeal shall be borne by the Engineer.

(c) Unless the order or resolution of suspension is set aside on such appeal, or the judge or the Council otherwise order, the Engineer so suspended or expelled shall not practise further, except (in case of suspension) upon expiry of the period of suspension. Pending an appeal the Engineer so suspended or expelled shall not practise.

#### Penalties

11. Any person who not being a registered or licensed Professional Engineer in the Province or who is suspended or has been expelled under the proceedings of the next preceding section:

(a) Practises as a Professional Engineer; or,

(b) Usurps the functions of a Professional Engineer ; or,

(c) Assumes verbally or otherwise the title of Professional Engineer, or makes use of any abbreviation of such title, or of any name, title, or designation which may lead to the belief that he is a Professional Engineer, or a member of the Association; or,

(d) Advertises himself as such in any way or by any means; or,

(e) Acts in such manner as to lead to the belief that he is authorized to fulfil the office of or to act as a Professional Engineer,

shall be liable upon summary conviction to a fine of not less than \$100.00, nor more than \$200.00, and on failure to pay the same to imprisonment for not more than three months for the first offence, and for any subsequent offence to a fine of not less than \$200.00 nor more than \$500.00, and on failure to pay the same to imprisonment for not more than six months.

#### Evidence

12. The certificate of the Registrar under the seal of the Association shall be prima facie evidence of registration or license, or non-registration, as the case may be.

#### Examinations

13. The Board of Examiners shall be nominated and appointed annually by the Council, subject to such approval as the Government of the Province may require.

14. (a) Examinations of candidates for registration or license shall be held as often and at such places as the Council may direct.

(6) The scope of the examinations and the methods of procedure shall be prescribed by the Council with special reference to the applicant's ability to design and supervise engineering works which shall insure the safety of life and property.

(c) The candidate shall submit to examination before the Board on the Theory and Practice of Engineering, especially in one or more of the recognized branches of engineering at his option.

(d) As soon as possible after the close of each examination the Members of the Board who shall have conducted such examination shall make and file with the Secretary a certificate stating the result of such examinations, whereupon the Council shall notify each candidate of the result of his examination and of their decision upon his application.

(e) A candidate failing on examination may after an interval of not less than one year be examined again.

(/) The Council shall, from time to time, prescribe the fees payable by candidates for examination.

#### Registration Wiilimii Examination

15. The Council shall consider an application for registration or license from any person who submits proof of qualifications possessed by such person by virtue of experience, training or examination by another examining body of recognized standing.

16. The Council shall have power to establish conjointly with any Council of any Association similarly constituted in one or more of the Provinces of Canada, a Central Examining Board, and to delegate to such Central Examining Board all or any of the powers possessed by the said Council respecting the examinations of candidates for admission to practise, provided that any examination conducted by such Central Examining Board shall be held at least in one place within this Province.

17. The board shall examine all degrees, diplomas, certificates and other credentials presented or given in evidence for the purposes of obtaining registration or license to practise, and may require the holder of such credentials to attest by oath or by affidavit on any matter

involved in his application.

18. (a) Notwithstanding any other provision of this Act, no person shall be registered unless at least twenty-three (23) years of age, and unless he has been engaged for

414

JOURNAL OF THE ENGINEERING INSTITUTE OF CANADA

eight (8) years in some branch of engineering, except in the case of a graduate from a recognized Engineering College, in which case the period of engagement in engineering work shall be reduced to six (6) years, which may include his term of instruction.

(6) Candidates for admission to practise who, for any reason, have been unable to take advantage of an academic engineering course, must serve at least six (6) years under a registered Engineer or under a Professional Engineer of recognized standing, and pass a preliminary examination satisfactory to the Board.

19. The Registrar shall issue a certificate of registration or a license to practise to an accepted candidate upon written instructions from the Council, and upon payment in advance of the prescribed fee by the candidate.

20. The Registrar shall keep his register correct, in accordance with the provisions of this Act, and the rules, orders and regulations of the Council.

21. (a) Each person who is registered or licensed to practise shall pay in advance to the Secretary-Treasurer, or any person deputed by the Council to receive it, such annual fee as may be determined by By-laws of the Association, which fee shall be deemed to be a debt due by the practitioner and to be recoverable with the costs of same in the name of the Council in any court of competent jurisdiction.

(b) If any registered practitioner omit to pay the prescribed annual fee within six months of the date upon which it became due, the Registrar shall cause the name of such practitioner to be erased from the register, and such practitioner shall thereupon cease to be deemed to be a registered practitioner; but such practitioner shall, at any time thereafter, upon paying such fee, be entitled to all his rights and privileges as a registered practitioner from the time of such payment.

(c) The Registrar shall not be required to issue a

license to practise to any non-resident practitioner otherwise entitled to such license unless the fee provided for by the By-laws of the Association shall have been previously paid.

22. Any person entitled to be registered under this Act who shall neglect or omit to be so registered shall not be entitled to any of the rights and privileges conferred by the provisions of this Act so long as such neglect or omission shall continue.

23. In the case of any refusal by the Council to register the name of any person as a Member of the Association, or of refusal to issue a license to practise, the person aggrieved shall have the right to apply to a judge of the Supreme Court, who, upon due cause shown, may issue an order to the Council to register the name of such person, or to grant him a license to practise, or make such other order upon such appeal as may be warranted by the facts, and the Council shall forthwith comply with such order. Such order when so made shall be final.

24. If the Registrar makes or causes to be made any wilful falsification in any matters relating to the register,

he shall forfeit a sum of not less than one hundred dollars (\$100.00).

25. If any person shall wilfully procure or attempt to procure himself to be registered or licensed under this Act, by making or producing, or causing to be made or produced any false or fraudulent representations or declaration, either verbally or in writing, every such person so doing, and every person knowingly aiding and assisting him therein, shall forfeit and pay a sum of not less than one hundred dollars.

26. All penalties imposed under this Act, or any of them, and all sums of money forfeited shall be recoverable with costs under the provisions of the law respecting summary convictions.

27. Any information for the recovery of any such penalty or forfeiture may be laid by any Member of the Association or by any person appointed by the Council.

28. Any sum forfeited under this act being recovered shall belong to the Association for the use thereof under this Act.

29. No prosecution shall be commenced for any offence against this Act after one year from the date of committing the offence.

30. The following persons are hereby constituted a Provisional Council of the Association:â€”

President

Vice-President

Councillors

The duties of the Provisional Council shall be to provide the register called for by this Act, to enter therein the names of those who are entitled to registration and who apply therefor under the provisions of Section 7, clause " b," and to call within six months from the coming into force of this Act the first General Meeting of the Association for those purposes and any other organization purposes of the Association; they shall have the powers conferred in this Act on the Council of the Association. Their powers shall cease on the election of the regular Council of the Association.

31. No provisions of this Act restricting the practise of the profession or imposing penalties shall take effect until one year after the passing of this Act.

32. Every person registered under this Act shall have a seal, the impression of which shall contain the name of the engineer and the words " Registered Engineer,

Province of " with which he shall stamp

all official documents and plans.

33. The activities of the Association are hereby restricted to the functions necessary to the administration of this Act.

#### JOURNAL OF THE ENGINEERING INSTITUTE OF CANADA

415

Professional Engineers

On another page will be found a copy of the draft act submitted by a special committee of the branches, which is designed to establish a body of professional engineers in Canada. The committee who drew up this act as a result of the resolution of the annual meeting were: " C. E. W. Dodwell, M.E.I.C, Chairman; A. Surveyer, M.E.I.C. Secretary; C. C. Kirby, M.E.I.C; A. R. Decary, M.E.I.C. R. F. Uniacke, M.E.I.C; Willis Chipman, M.E.I.C.

E. R. Gray, M.E.I.C; N. L. Somers, A.M.E.I.C; E. E. Brydone-Jack, M.E.I.C; H. R. McKenzie, M.E.I.C.

## Notes on "Civil Aviation"

F. H. Peters, M.E.I.C; R. J. Gibb, M.E.I.C; A. G. Dalzell, A.M.E.I.C; and A. E. Foreman, M.E.I.C

The western delegates met at Winnipeg en route to Montreal and spent two days together discussing the broad subject of legislation. No group of men could have worked harder than the men sent by the different branches for this purpose. It is to be noted that the members of The Institute are given no preference whatsoever in this proposal, while the expense of this meeting is being borne The Special Legislation Committee of the Institute which drew up the proposed bill for professional engineers during its sessions at the headquarters of the Institute from April 5th to the 10th, reading from left to right:

Arthur Surveyer, M.E.I.C, Montreal, Secretary of the Committee; E. E. Brydone-Jack, M.E.I.C, Winnipeg, Man., R. J. Gibb, M.E.I.C, Edmonton, Alta., F. H. Peters, M.E.I.C, Calgary, Alta., R. F. Uniacke, M.E.I.C, Ottawa, Ont., E. R. Gray, M.E.I.C, Hamilton, Ont., A. R. Decary, M.E.I.C, Quebec, Que., Newton L. Somers, A.M.E.I.C, Sault Ste Marie, Ont., A. E. Foreman, M.E.I.C, Victoria, B.C., H. R. McKenzie, M.E.I.C, Regina, Sask., C. C. Kirby, M.E.I.C, St. John, N.B., Willis Chipman, M.E.I.C, Toronto, Ont. and in the foreground C. E. W. Dodwell, M.E.I.C, Halifax, Chairman of the Committee. A. G. Dalzell, A.M.E.I.C, Vancouver, was present at the early sessions of the committee.

entirely by The Institute; that is, The Institute is unselfishly working in the interests of the whole profession. Other organizations in Canada, comprising professional engineers, will no doubt appreciate the work of The Institute in this connection.

A ballot will be submitted to the members very shortly and the result of this ballot will doubtless determine what action the various provinces will take in connection with legislative enactments.

WATSON -McCLELLAND BARRY, of Toronto, Ont. Born at Toronto Jan. 22nd, 1889. Educ. B.A.Sc, 1910, C. E., 1916, M.E., 1918, Toronto Univ, 1905-07, asst. engr., Munic Power System, Weston, Ont.; 1908, asst. engr., C.N.Ry. (5 mos. vac); 1910, asst. engr., Can. Westinghouse Co. (5 mos. vac); May 1911-Oct. 1911, res. engr., for Chipman 4 Power, in chg. of dsgn, installation, sewerage, etc, Dauphin, Man : Nov. 1912-July 1913, asst. mech. engr., Toronto Power Co.; Aug. 1913-Aug. 1914, asst. engr., Dept. of Pub. Highways, Prov. of Ont.; Aug. 1914-Sept.

1917, military eng. work, licut., Royal Engineers, both in Eng. and France; Dec.

1918, aviator & flight comm., Royal Air Force, employed as ch. instructor in Aeroplane design, etc. in School of Aeronautics. At the present time asst. engr Dept. of Pub. Highways, Toronto.

References: W.A. McLean, R. P. Fairbairn, G. Hogarth, P. Gillespie, W. Hul-er G. C. Parker, R. C. Muir, J. A. P. Marshall..

a special Committee be formed, composed of one



delegate appointed by each branch to meet at headquarters before the 15th of April, 1919, to draw up such sample legislation as it may deem necessary and advisable in order that the members of The Institute throughout the different provinces may ask for legislation on the same uniform basis.

That this Committee be authorized to obtain the necessary legal advice on the matter.

That this Committee shall submit the proposed legislation to the Council before the 1st of May, 1919.

That the Council shall then ask by letter ballot, before the 1st of June, 1919, the opinion of all the members of The Institute regarding the adoption of the proposed legislation prepared by the said special Committee of The Institute.

International Engineering Standardization: International Standardization as Regards Aircraft Parts and Accessories.

The Standardization of Aircraft Materials and Parts formed one of the earliest and most important pieces of war work undertaken by the British Engineering Standards Association, and was taken up when a request was received in June, 1917, from the Society of British Aircraft Constructors, asking for the formation of a Sectional Committee for Standardization in this matter. Such a Sectional Committee was at once appointed, and commenced work in August, 1917. Experience with military aircraft under the conditions obtaining in France, where the air forces of several countries were co-operating, soon indicated the need for a certain measure of International Standardization, not as regards the details of aircraft construction in general, but in connection with such points as affect the utilization, by the aircraft of one country, of spare parts, accessories and instruments belonging to the aircraft of another nationality. To take two examples only, the desirability of a standard series of dimensions for the size and spacing of the holes in the wooden hubs of propellers became evident; and it was further obvious that a great saving of time and expense would result if Allied agreement could be reached on the question of standard specifications for aircraft materials, so that materials purchased in one country to the Government specifications ruling there would be at once acceptable for a similar purpose in Government work in another country.

With objects of this kind in view, an invitation was forwarded by the British Engineering Standards Association to a number of representative authorities in the United States, including the U. S. Aircraft Board, the U. S. Bureau of Standards, the U. S. Navy Department, the U. S. War Department, the American Aircraft Manu-

facturers' Association, the Society of Automotive Engineers, the American Society of Mechanical Engineers, and the American Society for Testing Materials, asking that their delegates might proceed to England to attend an Aircraft Standardization Conference to be held early in 1918. This Conference took place in London in March, and was attended by fourteen American representatives. It considered briefly the differences in British and American Aircraft practice in regard to a great number of topics, such as: "Nomenclature, Timber, Ply wood, Glue, Propeller Hubs, Electrical Parts, Instruments, Ball and Roller Bearings, Sparking Plugs, Magnetos, Wheels and Tires, Structural Tubing, Rigging, Rubber, Dope, Fabric, and Steels; and the American delegates left for the United States with the understanding that a further conference would be called together in a few months, and that in the meantime everything possible would be done to prepare the ground for an agreement.

As a result of the Anglo-American Conference just described, and at the wish of the Ministry of Munitions, it was decided that the various Allied Governments should be approached with a view to the constitution of an International Aircraft Standards Commission, primarily, of course, as a war measure, but looking also to the international questions which are bound to arise in connection with commercial aviation. An Organization Committee under the Chairmanship of Sir Henry Fowler, Assistant Director General of Aircraft Production, drew up a tentative constitution, under which it was suggested that this Commission should be composed of a number of separate National Committees, resembling in this respect the International Electro-Technical Commission. In the case of those countries having National Standards Committees it was felt that their respective Sectional Committees on Aircraft Parts would naturally be selected as the National Committees representing each country on the International Aircraft Standards Commission. The organization of the Commission proceeded on this basis, and its first plenary meetings were held in London in October, 1918, which the writer attended as one of the Canadian delegates. The countries represented were Great Britain, Canada, France, Italy and the United States, the scheme of organization was fully worked out, and a Constitution formally agreed upon (subject, of course, to ratification by the various Governments), after which the Commission proceeded to consider in detail a number of the points in connection with which the necessity for International Standardization had been suggested. International Advisory Committees were appointed to deal with these questions, and it was arranged that their reports should be considered at the next Plenary Meeting of the Commission, to be held in Paris some time in 1919.

JOURNAL OF THE ENGINEERING INSTITUTE OF CANADA

## Notes on "Civil Aviation"

### The Development and Future of Aviation in Canada\*

By M. R. Riddell, Chief Engineer Canadian Aeroplanes Ltd.

One of the most notable features of the late European war has been the rapid development of the aeroplane from a more or less experimental toy to one of the most formidable of the many engines of war employed in that great conflict. Of course it may be that the great development along the special line has been at the expense of development in other directions, but even if this is so it is not too much to say that a tremendous impetus has been given by the war to aerial navigation generally.

As far as Canada is concerned, while a Canadian "J. A. D. McCurdy" was one of the earliest aviators, on this side of the Atlantic at any rate, beyond a little experimental work by Messrs. McCurdy and Baldwin in the early days, under the direction of Professor Bell, nothing was done in the line of aerial development until the spring of 1915.

At that time Mr. McCurdy, who had in the meantime

While the outbreak of the war put a stop to the proposed Transatlantic flight, it was suggested that a large twin engined bombing plane along the lines of the "America" might be constructed. As the Hammondsport and Buffalo plants were crowded with other work, the working out of this new machine was entrusted to the Canadian plant.

The original intention was to have the "Canada," as this machine was afterwards known, practically a duplicate of the "America," but with fuselage and landing gear instead of a hull, and two of the V.X. type 170 H.P. Curtiss motors instead of the smaller ones fitted in the "America." With these more powerful motors it was expected that a speed of 85 miles per hour would be attained as against the 60 miles per hour speed of the "America." Owing to these changed conditions, however, it was found necessary to change almost every part so that

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'Avro 504-K" Type Training Plane (R.A.F. Serial Number C-1501) Built by Canadian Aeroplanes Limited, Toronto, October, 1918.

become associated with the Curtis Aeroplane Co. of Hammondsport and Buffalo, organized a Canadian company known as Curtiss Aeroplanes and Motors Limited, with headquarters in Toronto. The special object of this new company was the manufacture of aeroplane parts for British orders, but soon much more interesting work was undertaken.

Just before the outbreak of the war a large twin-engined flying boat had been under construction at the Hammondsport works of the Curtiss Co. She was known as the "America," and it had been intended to attempt a Transatlantic flight in her.

This "America " (afterwards known serially as the H-4 type) was the forerunner of the series of large flying boats built by the Curtiss Co. for war service of the Allies. She was of approximately 76 foot wing spread, and was powered with two Curtiss 90 H.P. motors.

\*Read at Ottawa Professional Meeting, E.I.C., Wednesday Feb.

the " Canada " as built was practically a new design throughout.

Actual construction work was begun towards the end of June, 1915, and the first trial flight was made about the end of July. As there had been some delay in the delivery of the V.X. Motors intended for her, for this first trial she was fitted with two 90 H.P. motors similar to those in the "America. " This first flight was successful, the " Canada " showing a speed of upwards of 70 miles per hour with these smaller motors, balancing and handling well.

Some slight alterations were made as a result of this initial flight before she was again tried, this time with her proper motors. On this occasion she had a bad mishap on landing, and was partially wrecked. After repairs she was again tried and this time made a most successful flight, attaining a speed of better than 87 miles 12th.

JOURNAL OF THE ENGINEERING INSTITUTE OF CANADA

201

per hour, with a climb of over 3500 ft. in less than 7 minutes.

As a result of this successful trial an order was placed by the British Government for eleven more machines of this type, with certain modifications that had been found desirable.

In the meantime the " Canada " had been shipped to England, where she underwent a series of further tests. On one of these tests after the motors had been " tuned up," and the stranded wire in the interplane bracing replaced by " stream line " wire of much lower resistance an average speed of 102 miles per hour was recorded.

The " C" machines as these next eleven were known were in general similar to the " Canada " but embodied many refinements and improvements in arrangement and detail.

These " C " machines were duly completed and shipped and work was started on a still further improved

of approximately 350 H.P. and a speed of approximately 100 miles per hour (with streamline wire). The total flying weight with a military 'load of about 1000 pounds, 200 gallons of gasoline and a crew of three, was approximately 7000 pounds. The 200 gallons of gasoline would give a flying radius of between 500 and 600 miles at full power.

While work on the " C's " was at its height a force of about 600 men was employed.

After work on the " C-2's " was stopped, as noted above, the manufacturing activities of the Curtiss Aeroplanes & Motors Limited, were considerably curtailed, the manufacture of spare parts for British Buffalo orders, and the construction of some training planes of the JN-3 type as well as a few hydro aeroplanes for a foreign government, being all that was undertaken until the decision of the British authorities to establish training squadrons in

"JN-4" Type Training Plane (R.A.F. Serial Number C-101) Built by Canadian Aeroplanes Limited, Toronto, January 1917. (First Machine Turned Out by C. A. L.)

type to be known as the " C-2," when instructions were received (in June 1916) to cancel the order for " C-2 " machines and stop all further work on the type.

What probably caused this decision on the part of the English authorities was the trouble that had been experienced with the V.X. type of Curtiss motor ; also at that time reprisal raids were not in vogue, and the cry was for small machines of very high speed for scouting and fighting.

It seems a pity, however, that none of this " Canada " type were ever used in active service. At the time of their production (late 1915 and early 1916) they were probably quite the best machines of the type in existence, although of course not equal to later larger and more powerful machines of the same general type such as the Handley Pages.

The " Canada " and the " C's " were twin-engined biplanes, with a maximum wing spread of 76 feet, engines

Canada changed the general aeroplane situation considerably.

From the date of its incorporation Curtiss Aeroplanes and Motors Limited had maintained a flying school for the training of cadets for the air services, which although officially recognized by the British Government, was conducted as a private concern along purely civilian lines.

Pupils first of all received instruction on flying boats and after they had attained sufficient skill on these the course was completed on land machines of the training type. Many aviators were turned out who afterwards won distinction in the air services and the attention of the British Government was called to the fact that not only was there much excellent human material available in Canada, but the Canadian climate was such as to afford a greater number of possible flying hours, during the spring, summer and fall at any rate.

202

JOURNAL OF THE ENGINEERING INSTITUTE OF CANADA

On account of these considerations it was decided to establish extensive training fields in Canada.

For this training, in order to obtain machines quickly it was decided to use the JN type, similar to those employed by the Curtiss School, and an order for a large number of JN-4's (the latest model of the JN type at that time) was issued.

In connection with the order a new firm under the auspices of the Imperial Munitions Board was organized to undertake the work of manufacturing these planes and others which might subsequently be required, as it was felt, rightly or wrongly, that there was no private enterprise existing capable of handling the proposition satisfactorily.

This new firm was known as Canadian Aeroplanes Limited and was under the direction of F. W. (now Sir Frank) Baillie.

Canadian Aeroplanes Limited acquired the manufacturing business of Curtiss Aeroplanes and Motors Limited, except the business of manufacturing parts for the Buffalo firm, and immediately proceeded with the work of turning out the JN-4 machines.

Limited would not be nearly large enough to produce a sufficient number of machines in a reasonable time, and steps were taken to erect a new plant specially for the purpose. A site was chosen, and work was started about the beginning of February. The construction was pushed so rapidly that by May the transfer to the new plant was practically complete.

With some extensions subsequently added the new buildings provided a floor space of approximately 235,000 sq. ft. or about 514 acres.

The manufacturing equipment was most complete and provided for the production of practically every part of an aeroplane with the exception of the motors and instruments such as tachometers, gauges, altimeters, etc.

A well equipped testing department provided for the testing of all raw materials as well as finished parts; and a research department allowed experiments to be made on the proper heat treatment for various metal parts, the qualities of various samples of dopes and paints, etc.

While production was pushed to the limit, all materials and workmanship had to run the gauntlet of the testing department, the company's inspection department

"JN-4" Type Training Plane C-318 (Fitted with Snowshoes), February 1918.

The Curtiss Aeroplanes and Motors Limited continued their work of manufacturing spares for British Buffalo orders.

The greater part of the engineering and manufacturing staffs of the Curtis Aeroplanes & Motors remained with the Canadian Aeroplanes Limited.

Before beginning production of JN-4 machines on a large scale, it was found desirable to make some slight changes from the Buffalo design. The bridge type of control with which the Buffalo machines were fitted was changed to the more usual " joy stick, " metal construction was adopted for the rudder, elevators, and fin, and the design of the tail was altered so as to give better " stream lining " and reduce risk of damage in landing. The first machine was completed on January 1st, 1917, and was taken out to the Long Branch flying field for test. The trial flight was very successful, the machine was officially accepted, and production work was started in earnest.

It was soon evident that the premises occupied by the old Curtiss Aeroplanes & Motors Limited which had been taken over by Canadian Aeroplanes

and the A-I-D, or government inspectors, the result of all this care being that as far as I have information no accident ever occurred with one of our machines that could be traced to defective material or workmanship.

The production records climbed steadily from month to month, slowly at first, then by leaps and bounds until we reached a record of 318 machines in one month by the end of 1917. This result was achieved with a force of about 2500 men, and is a better figure than has been reached on a similar class of work with a similar number of employees anywhere else, as far as I have information.

At this rate the requirements of the Royal Air Force were soon supplied, and we were able to furnish the U. S. training fields with a number of training machines as well.

The total number of JN-4 machines turned out was approximately 1300 and spares sufficient to make the production equal to approximately 3000 complete machines in all; of these, 680 were furnished the U. S. fields.

The JN-4 is of course quite obsolete as a military machine, but has proved very satisfactory for training



203

purposes. There are several variations of this model differing in details, but the Canadian JN-4 is a two-seater biplane of 44 feet wing spread (upper plane), flying weight about 2100 pounds, and fitted with a Curtiss OX motor of 90-100 H.P. The speed is about 70 miles per hour.

While the production of the JN-4 was proceeding, an experimental machine of another type was turned out in the experimental shop. This was the De Haviland 6, a training plane that had been used to a considerable extent in England and which at one time it was proposed to substitute for the JN-4.

This DH-6 was tried out in July, 1917, and was found satisfactory, but by this time production was swinging nicely on the JN-4's, they had proved very suitable for the purpose and it was felt that to change over to the DH-6 would unnecessarily delay the output of machines. No more of this type were therefore built.

The DH-6 is a two-seater biplane of about 36 feet wing spread, both upper and lower planes being alike, flying weight about the same as the JN-4. The DH-6 was designed for a R.A.F. engine of 90 H.P. The one in

There is a wireless cabin in which is fitted a wireless set with a sending radius of about 25 miles and a receiving radius of about 1000 miles.

The engines, armament, bombs, wireless outfit, telephones, etc., were supplied by the U. S. Navy Department, but we had to make provision for the installation.

The construction of the first boat of our contract was commenced on April 22nd, 1918, and the boat was completed by July 15th, shipped to Philadelphia, and successfully tried out.

We afterwards worked up to a production of eight boats per month.

While the contract for F-5 boats was getting under way in the shops work was started on another type of machine for the R.A.F. training fields. While the JN-4 had been found suitable for general training, it was somewhat too slow, and was not sensitive enough to control

## Notes on "Civil Aviation"

for advanced work, so that cadets trained in Canada had to take additional training before proceeding to work on actual war machines.

Shipment of Canadian "JN-4" Training Planes to U. S. Training Fields. Mid-winter 1917-1918.

question was fitted with the same motor as used in the JN-4, and the speed was around 65 miles per hour.

The DH-6 is interesting as having a type of wing suitable for carrying heavy loads, at moderate speeds, the section being much more deeply cambered than that used in the JN-4, which was a modified form of Eiffel No. 36, a good general purpose curve.

When the wants of the R.A.F. had been satisfied for the time being, and there seemed a likelihood of a temporary lull in production a contract was obtained from the U.S. Navy for 50 flying boats of the new F-5 type. This boat had been developed at Felixstowe, England, and found the most suitable for patrol and anti-submarine work.

It is a large twin-engined boat, of about 102 ft. wing span, a total flying weight of around 14,000 lbs., and a speed, fitted with two 400 H.P. Liberty 12's, of about 100 miles per hour. Its length from nose to tail is about fifty feet. Its armament consists of between four and six machine guns, one Davis six pounder, and four 230 lb. bombs which are hung on racks under the wings.

The crew numbers six men, and a system of inter-communicating telephones is fitted.

To avoid this it was decided to equip certain training squadrons with the "Avro " 504-K training plane which was in use in England.

The "Avro " 504-K is a biplane of 36 feet wing spread, both upper and lower planes having the same span. It is of lighter construction and considerably greater refinement of design than the JN-4, while the wing section is one adapted for higher speeds. With these differences the "Avro is a considerably faster machine, the original machines of this model, which appeared in 1915, and were used to some extent at the front, having a speed of 90 miles per hour with an 80 H.P. Gnome Motor.

As a training machine the " Avro " 504-K is adapted to be fitted with seven different types of motor. For the Canadian training squadrons the "Avro " was fitted with

130 H.P. Clerget Motors, which were shipped out from England for the purpose. With this motor a speed of upwards of 100 miles per hour has been obtained.

It was found advisable to make some minor changes in the design on account of difficulty in obtaining material, and in order to reduce the number of spares necessary, by making certain parts interchangeable with corresponding parts of the JN-4. Thus the landing gear was

204

#### JOURNAL OF THE ENGINEERING INSTITUTE OF CANADA

completely redesigned, a V-type being used instead of the regular "Avro " type.

These changes caused delay and while the first machine of this type was delivered by October 1st, production was really only beginning when the armistice was signed and work stopped. We delivered only two machines of this type in all.

With the conclusion of the armistice the activities of the Canadian Aeroplanes came to an end, the R.A.F. order for 500 "Avros " being cancelled immediately and the U. S. contract for F-5 boats being cut from 50 to 30. The distasteful task of gradually discharging the staff of workers was immediately begun and by the end of January, 1919, when the F-5 contract was finally completed, the working force had been entirely disposed of except such office and other help as was necessary to complete the sale of the tools and fixtures, and the huge buildings lately so thronged with busy workers now stand empty and still.

The Curtiss Aeroplanes and Motors Limited which had been working on a contract for F-5 boat spares, has also discontinued aeroplane work, but has been able to retain a portion of its staff on another line of manufacture.

As will be seen from the foregoing the aeroplane industry of Canada during the war grew from nothing to very respectable dimensions. A large number of workmen were employed not only in the aeroplane factories, but also in supplying raw material " such as spruce lumber " and large numbers of machines of different types were successfully turned out. The quality of the workmanship in these machines was certainly equal to that found anywhere else, and the production records were unsurpassed. Canada has no reason to feel ashamed of her part in supplying the aeroplane needs of the Allies.

It is not possible to make more than a passing reference to the work of the R.A.F. in Canada. The complete account of this work is now being prepared in book form by the historical department of the R.A.F. and will shortly be issued.

It will be sufficient to note that as a result of the activities of the R.A.F. in training aviators, and of the firms building aeroplanes, there are now in Canada a large number of skilled workmen ready to produce aeroplanes and of skilled aviators ready to fly them when built.

Sand Bag Loading Test on Vertical Fin, Canadian "JN-4," May 1917.

"De Haviland 6" Type Training Plane Built by Canadian Aeroplanes Limited, July 1917.

Now that war activities are over the question naturally suggests itself "is the aeroplane destined to play a useful part in the industries of peace, or is it to rank in the future as in the past, as a purely military machine, with possibly an occasional one used here and there by an enthusiast for purposes of sport ?

A careful study of the question would seem to bring one to the conclusion that there are at any rate several directions in which aeroplanes could be usefully employed apart from war purposes, and in what follows an attempt will be made to show what these appear to the writer to be.

It may be taken for granted that aeroplanes will still be required as a part of the equipment of the armed forces of the country. There are good people who tell us that there will never be another war and, therefore, no more armies or armaments are necessary.

Such statements always remind me of a passage in Scott's "Guy Mannering" where the sturdy yeoman, Dandie Dinmont is warning an English traveller against the dangers of the border wastes, and the female keeper of the wayside inn declares that there is no danger now, as they're all honest on the borders. Dinmont replies:

"Aye Tib, that'll be when the deil's blind, and he's e'en no sair yet."

The country that neglects to keep its air service up to date and ready for immediate service will probably have to pay a terrible price sooner or later. Air raids in the next great war will be carried out by larger and more powerful machines used in vastly greater numbers than in the present war, and the country that is not in a position to defend itself from such attack, and loses the control of the air above its territories will be by that very fact defeated.

It seems, therefore certain that a considerable number of planes will be required for military purposes. But while this will, I believe, be the case, I am convinced that it is equally true that if the aeroplane industry is to develop to any respectable dimensions, it will have to be along commercial rather than military lines. This brings us to the question, is the commercial development of the aeroplane possible ?

#### JOURNAL OF THE ENGINEERING INSTITUTE OF CANADA

205

This is the problem that must be solved by businessmen and engineers working together if the aeroplane industry is to be a factor in the commercial life of the country.

The war has developed, in general, the following types of machines:

- (a) The small fast scout plane, of very high speed and small carrying capacity, generally a single seater as the Spad, the Sopwith Camel, the SE-5, etc.
- (6) The larger and more powerful general purpose machine of high speed and fair carrying capacity generally a double-seater, as the DH-4.
- (c) The still larger bombing plane, generally at least twin-engined, of somewhat lower speed, but great carrying capacity as the Handley Page, the Super Handley Page, the DH-10, the Caproni, etc.

probably choose a " tank " as a motor vehicle for pleasure or commercial purposes.

In this connection it is interesting to note that the attempt to use DH-4's built for war purposes in the U. S. as mail carrying machines, has so far proved a failure, while machines specially built or adapted for mail carrying " the JN-4 type with the 150 H.P. Hispano Suika motor and the R-4 with the Liberty 12" have been very satisfactory.

For commercial uses more rugged construction will probably be found desirable, particularly with reference to parts affected in landing " greater reliability, and longer service without overhauling in the case of motors. As the attaining of a very high ceiling will not in general be necessary, lower compression pressures could be used satisfactorily, this, with somewhat heavier construction

"Avro 504-K" Type Training Plane C-1502. Last Plane Built by Canadian Aeroplanes Limited

for R. A. F. November 1918.

(d) The flying boat for naval service, the largest types of which as the F-5 or NC-1 are of large carrying capacity, and in general correspond to the large bombing planes.

(e) The training plane, moderately sized, moderately powered, fairly slow and comparatively easily handled as the DH-6, the JN-4, the "Avro " 504-K, etc.

It seems probable that none of these war types at present in use will prove permanently satisfactory for commercial purposes without considerable alteration; in other words an aeroplane for commercial use will probably have to be specially designed for a particular class of service in order to prove satisfactory.

This is not remarkable nor are these considerations confined to aeroplanes. A warship would not make an efficient passenger or cargo vessel, and none of us would

would tend to greatly increase the serviceable life of the motors. It should be constantly remembered, however, that increased weight in construction of plane or machinery cuts down the available load capacity.

The peace development of the aeroplane will probably be along the following general lines :

(a) Machines for sporting or pleasure purposes.

(6) Machines for what are generally termed " commercial " uses, including:

1. Machines for mail carrying;
2. Machines for carrying passengers and freight;
3. Machines for special purposes.

With regard to the use of aeroplanes for sport or pleasure, a considerable development may reasonably be expected

206

#### JOURNAL OF THE ENGINEERING INSTITUTE OF CANADA

along this line but of much smaller dimensions than has occurred in the case of the pleasure automobile.

The reasons are several, perhaps the chief being the aversion that so many have to leaving the safety of terra firma. One may produce facts and figures to prove that flying is really very safe " as for example that the mail carrying planes between New York and Washington during the months of September and October flew over 22,000 miles and carried over 30,000 lbs. of mail in all weathers without serious accident and with only one forced landing " but a certain number will always remain unconvinced.

Another drawback is the space required for taking off and alighting which certainly limits if it does not entirely preclude the use of aeroplanes in crowded quarters such as cities. Improvement in this respect will probably be

It is practically certain, however, that a five-passenger machine will never be available at anything like the price of a " flivver."

Coming now to the purely commercial machines, those engaged in the transportation of passengers, mail and freight, while reliable data as to running costs of aerial transport under peace conditions are not available, nevertheless it is possible to form some fair estimate of the conditions under which it will be possible to compete with other established means of transport.

In long settled territories where competing methods of transport, such as railways, steam or electric are well developed, the governing advantage of aerial transport

will be speed. As the aerodromes will probably have to be located on the outskirts of cities, some time will be lost in conveying passengers or freight from the collection

made, and already a successful landing has been made on the roof of a building, but this objection will probably remain, more or less.

Another factor is that of cost. Such machines as were available before the war, cost in the neighborhood of \$7,500.00 at least, and required the constant attention of skilled mechanics to keep in flying condition — they were at best rich men's toys.

Just at present and for some time there will probably be available numbers of machines which have been built for war purposes, at sacrifice prices, but the upkeep cost of these machines will probably be considerable, and in any case the supply will soon be exhausted.

Since the war several firms have turned their attention to producing small one-man planes of moderate size and power, and with a reasonable first and upkeep cost. Several of these are advertised to sell around \$2,500.00.

point to the aerodrome. It follows, therefore, that there must be some minimum distance below which the advantage of speed will not exist, and as distances become longer the advantage of aerial transport in this respect will become more apparent. For short distances, therefore, it would seem that aerial transport is not likely to be commercially possible.

The absence of the necessity for a track gives the aerial transport system a great financial advantage, nor will this be nearly offset by the cost of necessary landing grounds at reasonable intervals, wireless installations, weather reporting services and signalling systems, to indicate routes by night or in fog.

Another advantage of the aerial transport lies in the fact that as compared with a railway train an aeroplane is a small traffic unit, and urgent traffic can be handled by a succession of planes from the aerodrome as the occasion arises, with time economy over the train which requires longer intervals between units to allow of the accumulation of sufficient load for a unit.

Considering now specially passenger traffic, this divides itself into two general classes, business and pleasure. At first the greater part of the passenger traffic will be business. On account of the higher speed of the aerial service, many business men will no doubt avail themselves of it, because although the fares will be higher, this will be more than offset by the economy of time.

For instance, it will be possible, under favorable conditions, to fly from 400 to 500 miles out and home within the day, with sufficient time between flights for transaction of reasonable business.



## Notes on "Civil Aviation"

Passenger service will probably begin by the use of single machines for rapid journeys in any direction, but later it will become possible to institute regular services along settled routes on scheduled time.

Pleasure traffic will probably be small in volume for some considerable time, and will be confined to those taking a trip for the novelty of the experience.

have to be supplied, and the method of entrance will have to involve less or an acrobatic performance than at present. This will mean added weight and the reduction of the passenger carrying capacity, but these changes will, in the writer's opinion, be found necessary if trade is to be secured.

Freight traffic will include :

- (a) Mails.
- (b) General Freight.

In mail carrying commercial conditions do not necessarily rigidly apply " in other words national considerations might demand that the use of aircraft should be developed, and in this case it might be good national business to bear part of the cost of an aerial mail service with this object in view.

Mails offer a very satisfactory class of freight for aeroplane carriage, because the load is fairly uniform, the weight small, and the demand for speed urgent.

For the longer distances the saving in time in the delivery of mails by aeroplane will be enormous " for instance it is estimated that mail could be conveyed from

l 'F5L" Type Flying Boat, Built by Canadian Aeroplanes Limited, Toronto, for U. S. Navy.

under Test at Navy Yard, Philadelphia, August 1918.

First Canadian Boat

As the safety and convenience of this method of travelling becomes more apparent, this traffic will increase in volume.

For passenger traffic two points will require special attention, safety and comfort. Safety, in fact, will have to be a primary consideration if support from the travelling public is expected. In this connection it may be noted that commercial machines can be made inherently stable and automatic stabilizers can be employed to an extent that has not been practicable in war machines " so that it would appear that commercial machines could be made aerodynamically much safer than the present war types.

In use they will not be subjected to the severe and somewhat indeterminate stresses due to " stunting," and, therefore, for the same calculated factor of safety, they will really be structurally much safer.

The question of comfort will also require much attention. The travelling public will demand a much greater degree of comfort than is available in present machines. Some form of comfortably enclosed cabin will

London to Calcutta in four days against 16 days, the best possible at present.

Considerable experimental work has been done already along this line, and the results have in general been so satisfactory that in the immediate future the existing services will be greatly extended.

When we turn to the consideration of other freight, conditions are not quite so favorable. If reasonably high speed (which has already been noted as the principal asset of aerial transport in competition with other methods) is to be maintained, then the commercial load must not exceed approximately 25 per cent, of the total weight of the loaded aeroplane.

It would, therefore, seem that the class of freight that can be commercially handled by aeroplane in competition with other means of transport, will be limited to articles of high intrinsic value and small weight, or articles which are specially "rush." For instance, laces, jewels, precious metals, tea samples, drugs, dyes, chemicals, small spare parts of machines, etc.

208

#### JOURNAL OF THE ENGINEERING INSTITUTE OF CANADA

For this class of service it would seem that aeroplane transport could only hope to act as auxiliary to surface methods of transport.

In undeveloped parts of the country where there are no established competing methods of transport, aerial transport, providing as it does ready means of reaching points previously practically inaccessible, will show to much greater advantage, and offers proportionately a better commercial proposition. Of course, the volume of such traffic will probably not be large.

In cases where traffic from one place to another is interrupted by some obstacle involving changes in the method of surface transport "such as a sea passage" aerial transport scores a great advantage.

This brings us to an exceedingly interesting question, namely, that of Transatlantic, or perhaps it would be better to say Transoceanic Aerial Service.

While we may reasonably expect a successful Transatlantic flight to be made by aeroplane or flying boat in the near future, possibly this coming summer, it seems probable that when regular aerial service over the Atlantic and other oceans is established, the aeroplane will not be

the type of air vessel generally employed. For work of this kind, as well as for long flights overland, involving several days duration, the lighter than airship of the Zeppelin type appears to offer superior advantages in the way of comfort and safety. As compared with an aeroplane, the largest types of dirigible at present in existence have a gross weight of 60 tons with a disposable load of 30 tons "about nine times that of the largest existing type of aeroplane.

The maximum speed possible is probably not over 70 miles per hour as against about 100 miles per hour for the large type of aeroplane adapted to similar service, but even this is much higher than that possible at present with steamships. The large load carrying capacity makes possible the provision of much greater comfort for passengers, and with respect to safety, the breakdown of the machinery would not necessitate immediate landing "a factor of some importance in crossing a large body of water. Minor breakdowns could no doubt be repaired in the air and the journey continued without landing. On the other hand provision for landing and housing at the terminal points would probably be more expensive than in the case of aeroplanes, and the regularity of the service would probably be more adversely affected by bad weather.

Applying this discussion to Canada, this country seems to offer particular advantages for the establishment of aerial transport. Large portions of it are in the undeveloped state as regards transportation facilities. The use of the aeroplane would enable mail and express package freight as well as passenger service to be extended to points at present practically inaccessible, or in other words places which it takes days or weeks to reach under present conditions could be reached in a few hours by aeroplanes.

The development in Canada is likely to be first of all along the lines of a postal service. This will enable considerable experience in commercial flying to be obtained, and will familiarize the mind of the public with the idea of aerial transport, thus creating confidence. It is the lack of confidence on the part of the average

man in the safety of aerial travel that is, as stated before, one of the most serious, if not the most serious difficulty in the way of development. This has been created by reading in the public press highly coloured accounts of fatal accidents ; where these are considered by themselves, without reference to the peculiar circumstances under which most of them occurred (the intensive system of training in all kinds of stunt flying necessary under the late war conditions), and also without reference to the proportion of accidents to flights, an altogether exaggerated and distorted idea of the dangers of flying is created.

When public confidence in flying is once fairly established, the writer ventures to predict that development of aerial transportation systems along the lines suggested will be rapid.

In the meantime, research work in aerodynamics should be pushed, and it is gratifying to know that several of our universities are already taking the matter up.

## Notes on "Civil Aviation"

A great many other problems will have to be dealt with as flying becomes more common " for instance, the establishing of flying rules of the road; questions with relation to trespass and liability in case of accident incurred in flying over private property; the determinations of the best air routes; custom problems, etc.

All this will take time; but it will be done and the writer is firmly of the opinion that in a comparatively short time flying will be so common as not to excite comment, and no one will think anything of travelling from Toronto to Montreal in about three hours or from Toronto to Winnipeg in ten.

When long distance flying becomes common, it will probably be found necessary to have stores of the spare parts most likely to be required, such as propellers and various engine parts, at conveniently located depots along the courses of travel. In the event of a mishap to any of these parts, repairs could then be quickly made, and the journey continued. On account of the weight it would not be feasible to carry spares (except small parts such as spark plugs, etc.) on board as is done in the case of a steamship. It is in this connection especially that standardization of parts of aircraft will prove so valuable not to say essential, more particularly with reference to international aerial services.

There remains to be considered special uses to which aeroplanes can be put.

One field in which it would appear that useful service could be rendered is that of fire patrol of forests. Destructive bush fires are very small at the beginning, and if immediately detected could be easily dealt with. A fire ranger from an elevation of say 5,000 feet could command a view of a wide stretch of territory and could detect the first signs of a fire.

For this service in Canada it is probable that the small flying boat or at any rate a hydro aeroplane (aeroplane fitted with pontoons instead of wheels) would be found best.

The writer has had survey experience in Northern Ontario and Quebec and can state that as far as his personal observation goes, possible landing grounds for aeroplanes are few and far between. On the other hand

### JOURNAL OF THE ENGINEERING INSTITUTE OF CANADA

209

there are innumerable small lakes and rivers on which a small flying boat could alight in safety and from the surface of which it could take off.

Flying boats could also be employed in connection with life saving stations along our coasts, and in general coast patrol work.

A question which might reasonably arise in connection with the use of aeroplanes in all seasons in Canada is the question of rising from or alighting on a surface covered with snow, especially if the snow be soft, and of considerable depth. It is obvious that in the case of a machine

## Notes on "Civil Aviation"

equipped with the ordinary landing gear with wheels, a depth of soft snow might so impede its progress on the ground that it could never reach a flying speed, particularly

1917-1918 much flying was done with them. It was even reported that a machine equipped in this manner took off and landed on a snow surface more easily than a wheel equipped machine on ordinary ground.

In fact so successful was the experiment that it had been intended during the winter of 1918-1919 to do the bulk of the training work at the Canadian Camps, and a large number of these snow shoes were ordered from Canadian Aeroplanes Limited. This order was partially completed at the time of the armistice.

From the experience of the R.A.F. therefore, it would appear that as far as snow conditions are concerned aeroplane service could be maintained throughout the winter.

D. O. LEWIS, M.E.I.C., Victoria, B.C.  
Newly elected Vice President.

WALTER J. FRANCIS, M.E.I.C., Montreal.  
Newly elected Vice President.

in the case of a heavy machine. At the time when the R.A.F. established training squadrons in Canada it was considered so difficult if not impossible to continue flying under the ordinary conditions of a Canadian winter, that for the winter of 1917-1918 the bulk of the training camps were transferred to the South, only a small number remaining, more as an experiment than anything else. Experience proved that while a take off or a landing could be effected without special difficulty from a hard snow surface, there was always the possibility of one of the wheels striking a soft spot, when a spill was practically certain.

Then it was suggested that snow shoes or " skis " might be fitted instead of wheels. This was tried on several machines, and proved so satisfactory that a considerable number of machines were at once equipped with these " skis " and during the later part of the winter

## Notes on "Civil Aviation"

As commercial aerial service extends, new uses for the aeroplane will be continually found and in a comparatively small number of years instead of considering it as an interesting but somewhat impractical toy, flying will have become a matter of everyday life, and we will wonder how we ever got along without it.

As a result of the higher speed possible with aerial transport, nations will be brought in closer intercourse with one another, mutual understanding promoted and the possibility of international conflict lessened, so that while the aeroplane has proved it can serve its turn in war, it will also prove that it can help to bring about the condition wished for by the poet: "â€œ"

" Now let us pray that come it may  
As come it will for a' that  
That man to man the world o'er  
Shall brithers be, for a' that.

*The Civil Service Commission of Canada* : hereby give public notice that *applications will be received from persons qualified to fill the following positions in the Civil Service of Canada* : " [...]

*Selections for eligible lists of applicants qualified to fill similar vacancies* which may occur in future may *be made from applications for these positions.*

*According to law, preference is given to returned soldier applicants, possessing the minimum qualifications.*

Return soldier applicants should furnish a certified copy of their discharge certificate.

In the case of positions numbers [...] preference will be given to residents of the provinces in which the vacancies occur.

Application forms, properly filled in, must be filed in the office of the Civil Service Commission not later than [...] Application forms may be obtained from the Dominion-Provincial Employment Offices, or the Secretary of the Civil Service Commission, Ottawa.

By order of the Commission,  
Wm. Foran,  
Secretary.  
Ottawa, May 8th, 1919

JOURNAL OF THE ENGINEERING INSTITUTE OF CANADA pg 339 - An Experienced Transition : Adaption of the Hydroplane to Exploration

Editor, Journal:

It has occurred to me that while the Press of our Country has been advocating the use of the hydroplane as a quick and efficient means of forest protection and conservation that there still exists a far larger field for its use than this alone, by this I mean that when a new idea is launched it should cover its uses in general more than in particular, forestry in this case will be only a branch.

Knowing the use of this new arm from experience overseas, I naturally am deeply interested in the subject. Incidentally as an engineer with a fair experience of conditions in our Great North, I would like to suggest the many other ways in which the hydroplane could be of use insofar as the development of the great resources of our north country are concerned:

Let us, for instance, consider the question of research, geological, hydrographic and agricultural. The sending of expert engineers by hydroplane, from an established base, say, Lake St. John, with the oblique photograph apparatus in common use in the theatre of war, which on the machine at an elevation of 1000 feet, can take a picture, showing the

## Notes on "Civil Aviation"

general lines of the country: lakes, mountains and rivers, with a vertical base of say, 500 yards, extending forward and outwardly for 6 miles, with the possible upper base of 6 miles, giving a very fair idea of the elevation and contours of the country.

The landing can be made upon our numerous lakes in that region which to my general knowledge, are never farther apart than a matter of 10 miles. Tests of soil such, for instance, as planting grain, corn, etc., the exploration of the geological formations, the sizing of water-powers, and the examination of fisheries, etc., can be made all of which would be invaluable data, to the provincial department of research. Also from the lumberman's point of view the examination of valuable timber and protection thereof, and a great many other things too numerous to mention.

The sister province, Ontario, I must say, has given an example of progressiveness insofar as the exploration and exploitation of their north country is concerned. It is a matter of common knowledge the great benefit that has been derived by the building of the Temiscamingue and Northern Ontario Railway, for the Ontario Government ; and the projection of the Transcontinental Railway through the Abitibi, and the subsidizing of the Algoma Central, all of which have more than repaid their sponsors by opening up the great mine fields of Cobalt, Porcupine, and the fertile, clay-belt of the Abitibi.

Why could not this Province of ours, in view of the great demands which will be made by all returned soldiers for large public expenditures, not open a new railway for the development of our own north country, which is, no doubt, as rich as that of the sister province. There is very little doubt that such an investment would not only please the public, but would be an investment in the fullest sense of the word, and would bring magnificent results. It is a well-known fact that the credit of the country depends on its natural resources, but these natural resources must be in view and not in imagination.

A practical way of proving these resources is by practical development. Heretofore, railway construction in the north, far from its base of supplies, has been a very serious problem; the country being virgin, and more or less, unknown, and distances great. It is obvious that, adapting the hydroplane to this particular branch of engineering would reduce the preliminary cost of survey by 50 p.c. and likewise reduce the duration of these surveys by at least the same amount. For instance, it is proposed to build a line from St. Felicien and Lake St. John, to that lake of mystery, called Mistassini. I roughly calculate the distance at 200 miles. With a base at St. Felicien, and using a small light Curtiss machine equipped with the oblique photograph apparatus (45 degrees), a reconnaissance survey could easily be made ; and in the course of a month, with the data supplied by these photographs, a location could be tried, which, I am of the opinion, would fit in.

The extent of line generally allotted to each party of engineers on this work, is roughly from 40 to 50 miles long; each working towards the other, so as to join up. On determining the line to be followed, from the reconnaissance survey, how easy it would be to place each party at the desired point where their survey is to commence by means of the hydroplane working from the base. The parties could also be supplied with provisions by the same method. In other words, I believe the aeroplane has arrived to stay, and is bound to revolutionize the old methods of the location engineer.

Again, the outline of our lakes, outlets and inlets in the north are in a large number of cases so imperfectly explored and known, that one can get but a vague idea from Government maps of what really exists there. All these could be quite clearly outlined and recorded, in exact position, by means of the hydroplane at a high altitude, using a photographic apparatus with telescopic lamps.

The machine that could be used for this purpose, would be the Curtiss biplane, carrying two men with a cruising radius of 4 hours, and a speed of 75 miles per hour, minimum, at the cost of \$7,000.00 per machine. For transportation purposes, the Caproni triplane, which is manufactured in the United States, can carry 20 men, or 5000 pounds at the speed of 85 miles per hour, with a cruising radius of 5 hours, and costing \$ 7,000.00.

Another advantage which must be considered is the employment of our young men who are returning from overseas, who have qualified as pilots and observers in the Royal Flying Corps. It is needless to say that much time and labor, beside expense, has been devoted to the training and development of these men, which expert knowledge should bring some results for the benefit of the country which has trained them.

## Notes on "Civil Aviation"

In conclusion, I believe that a general idea has been given of the advantages of the aeroplane in the development of new countries, but it has been general more than technical. This is a matter that, if my suggestion should be favourably considered, could be gone into in detail, I am sure, to the satisfaction of interested parties.

Yours truly,

Lieut.-Col., R. De La Bruere Girouard, A.M.E.LC.

**October 26th, 1916 : Flight Lt. Franklin Sharp Rankin, R.M.C., S.E.I.C. (Student member, Engineering Inst. Canada) killed in action above Bapaume**

Franklin Sharp Rankin:-

born in Woodstock, N.B., on July 31st, 1894

graduate of the 1914 class of the Royal Military College and

enlisted in the early days of the war at the age of nineteen.

Typical of the huge class of Canadians who engaged with the Royal Air Forces and did so much to make the British Air Forces live in all history.

In reply to a letter addressed to his father concerning his son's record, Dr. Rankin writes: that the facts are all summed up by saying "he went and stayed"

The following letter was sent by Colonel G. J. Carmichael, 18th Squadron Royal Flying Corps, to Dr. Rankin:

He was one of the pluckiest fellows I have ever had in my Squadron, and I am sure he met the death he would have chosen.

He was doing escort to a photographic plane well over the German lines.

First they attacked three hostile machines and drove them off.

They then attacked three more, sending one down in flames, and the second glided down emitting smoke, evidently having been hit in the engine.

He was standing up firing over the top plane, firing at the third machine, when a bullet hit him in the head.

It was a grand fight against long odds, and it was a splendid death.

I am most awfully sorry to lose him;

He had done a long spell of good work and had taken part in a good many scraps.

Only two days before he was in a big melee, and shared honours over a machine that fell in our lines.

He was always out for a fight, my only apprehension was that he would overstep the mark.

His pilot and he together took an awful lot of straffing.

He is a great loss."

A Flying Corps' communique gives the following account of Lieut. Rankin's last engagement:

On the 23rd October, 1916, Sec. Lieut. F. L. Barnard (pilot) , with Lieut. F. S. Rankin (Pilot or Obs or both ?) , No. 18 Squadron, engaged seven hostile machines near Bapaume.

Two of the enemy were hit and one of them went down out of control.

During the engagement Lieut. Rankin was killed, *and the machine badly damaged*.

Sec. Lieut. Barnard had some difficulty in returning to our side of the lines."

Colonel W. W. Melville, under whose command Lieut. Rankin, went to Europe, wrote as follows:

Your son was with me eighteen months and I became very much attached to him.

Individually *he was* the soul of honour, *absolutely without fear*. [...]

In all my communications with him he treated me very courteously and with respect, and had he been my own son he could not have given me better support.

His work was splendid, and *having a splendid physique he was able to do the work of two men*,

I regret very much that he has not been permitted to live."

Lieut. F. L. Barnard, his pilot, writes to his mother;

*Rankin, was by the far the most daring and reckless man in the R.F.C. that everyone, without exception, was frightened to go (flying) with him.*

*His one aim and object was to get German blood and whether he ever returned or not was a mere trifle.*

He had been shot down three other times, and was truly on the war path.

One day we were out together and flew over a German air cadet school, that are so strongly guarded that no one would have a ghost of chance if they were ever attacked, and Rankin was determined to fly low and drop bombs on it, but I would not go, and after that I was even more unwilling to go with him, but the day the Germans attacked with seven planes, though I had hated to go up, yet *my first thought when the Germans appeared was*, thank Heaven, it is Rankin



## Notes on "Civil Aviation"

and no one else, and *had anybody else been at the guns neither of us could have lived a minute*, as it was, Rankin was as cool as though we were toasting our toes by the fire, and would not leave at all, but kept the place guarding the photographing plane until it got safely away."

### Preliminary Notice of Applications for Admission and for Transfer

20th October, 1919.

The By-laws now provide that the Council of the Institute shall approve, classify and elect candidates to membership and transfer from one grade of membership to a higher.

It is also provided that there shall be issued to all corporate members a list of the new applicants for admission and for transfer, containing a concise statement of the record of each applicant and the names of his references.

In order that the Council may determine justly the eligibility of each candidate, every member is asked to read carefully the list submitted herewith and to report promptly to Secretary any facts which may affect the classification and election of any of the candidates.

In cases where the professional career of an applicant is known to any member, such member is specially invited to make a definite recommendation as to the proper classification of the candidate.\*

If to your knowledge facts exist which are derogatory to the personal reputation of any applicant, should be promptly communicated.

Communications relating to applicants are considered by the Council as strictly confidential.

\*The professional requirement are as follows:

Every candidate for election as MEMBER must be at least thirty years of age, and must have been engaged in some branch of engineering for at least twelve years! which period may include apprenticeship or pupilage in a qualified engineer's office or a term of instruction in some school of engineering recognized by the Council.

The term of twelve years may, at the discretion of the Council, be reduced to ten years in the case of a candidate who has graduated in an engineering course. In every case the candidate must have had responsible charge of work for at least five years, and this not merely as a skilled workman, but as an engineer qualified to design and direct engineering works.

Every candidate for election as an ASSOCIATE MEMBER must be at least twenty-five years of age, and must have been engaged in some branch of engineering for at least six years, which period may include apprenticeship or pupilage in a qualified engineers' office, or a term of instruction in some school of engineering recognized by the Council. In every case the candidate must have held a position of professional responsibility, in charge of work as principal or assistant, for at least two years.

Every candidate who is not a graduate of some school of engineering recognized by the Council, shall be required to pass an examination before a Board of Examiners appointed by the Council, on the theory and practice of engineering, and especially in one of the following branches at his option Railway, Municipal, Hydraulic, Mechanical, Mining, or Electrical Engineering.

This examination may be waived at the discretion of the Council if the candidate has held a position of professional responsibility for five years or more years.

Every candidate for election as JUNIOR shall be at least twenty-one years of age, and must have been engaged in some branch of engineering for at least four years.

This period may be reduced to one year, at the discretion of the Council, if the candidate is a graduate of some school of engineering recognized by the Council. He shall not remain in the class of Junior after he has attained the age of thirty-five years.

Every candidate who is not a graduate of some school of engineering recognized by the Council, or has not passed the examinations of the first year in such a course, shall be required to pass an examination in the following subjects Geography, History (that of Canada in particular), Arithmetic, Geometry Euclid (Books I.-IV. and VI.), Trigonometry, Algebra up to and including quadratic equations.

## Notes on "Civil Aviation"

Every candidate for election as ASSOCIATE shall be one who by his pursuits, scientific acquirements, or practical experience is qualified to co-operate with engineers in the advancement of professional knowledge.

The fact that candidates give the names of certain members as references does not necessarily mean that their applications are endorsed by such members.

1919 : Aircraft in peace and the law - James Molony Spaight : Regulations framed to secure safety of international circulation, whether by land, by sea, or by air, might have in view the safety of two or, with a subdivision of one of these classes, three classes of persons, and they might aim at securing it in two distinct ways. In other words, they might pursue either or both of two ends :

A—the end of the safety of those carried in the vehicle, who might again be distinguished according as they were (i) the crew or persons working the vehicle, and (2) the passengers or those carried in it but not working it ; and

B—the end of the safety of third parties, whether the general public or that portion of it which travels in other similar vehicles.

They might pursue these ends by either or both of two means : X— by ensuring that the vehicle was sound ; and Y— by ensuring that the person or persons in charge of it were competent.

The question before us is whether an international Convention should pursue the ends A and B by the means X and Y, or whether either, and if so which, of the ends, or again of the means, should be neglected.

### Safety Provisions for Air Locomotion

How, then, should one legislate internationally for safety in the air ? Should ends A (both subdivisions) and B both be sought, and should means X and Y both be employed ? One can be guided to an answer by the automobile and maritime precedents ; but it is necessary to remember, in regard to the latter, that an aerial vehicle circulates in areas entirely different from those in which ocean-going steamships ply. A steamship cannot come down in a city street or in a citizen's back garden.

### The Purpose of Safety Certification in the Case of Aerial Locomotion unprecedentedly wide

For the moment we may neglect collision rules for the air (which are dealt with in Chapter VII, *infra*) and consider only the question of certification of vehicle and personnel as a means of ensuring safety. From the nature of aviation the safety of third parties—end B— must necessarily be secured, not primarily, as at sea, by collision regulations, but, as in the case of motor vehicles, by certification of machine and driver or pilot. Certification has consequently a wider purpose in the case of aircraft than in the case of seacraft.

It has to be relied upon to secure the safety of all the three classes, A (i), A (2), and B ; and of these the greatest numerically and the most worthy of consideration in virtue of their passivity are the people in class B. Indeed, given that class B must be protected, the safety of classes /i (i) and A (2) would almost automatically

follow from the certification (and only certification is here in question) which would be necessary to secure the safety of that one class. To secure it, one would expect both means X and means Y to be employed. Yet one finds a tendency in recent projects of legislation to ignore class 5, so far as their protection by means of the certification of aircraft and pilots is concerned, and to think only of class A, and, of class ^, principally of subdivision (2). Again one finds means Y placed in a position of greater prominence than means X. The former tendency will probably be rectified before long by some serious catastrophe which will draw public attention to the importance of ensuring that flying machines are safe not only for the public carried in them as passengers, but for the much greater public over whose heads they fly as well. The need for the protection of aviators themselves, so far as certification of aircraft is a protection, will also force itself to the front. As to the preference shown for means Y over means X, this is the inevitable result of the comparative nature and conditions of the two kinds of certification. The certification of personnel is a simple matter and is administratively effective and worth while ; that of the material is so troublesome, recurrent, and unsatisfactory in results that doubt has been expressed whether it pays.

As long ago as 1910 M. Ernest Archdeacon stated in *La Revue Aérienne* that certificates of navigability were a " gross error " ; his view being that flying machines were in the stage of rapid and constant development and that the standard of safety and the origin of flying accidents were equally unknown factors. He held strongly that to require certification as to airworthiness would hamper seriously the progress of aviation. ^  
• R.J.L.A., 1910, p. 326.

M. Archdeacon's views are still echoed by many authorities to-day. Whether a certificate of navigability is necessary or desirable is a question that is much debated. M. Fauchille's draft project of a Convention, originally published in 1902 and revised in 1910, makes the *permis de circulation* dependent on proof of navigability.^ The French Presidential Decret of 17 December, 1913, ^ required every aircraft to obtain a certificate of navigability by actual examination conducted either by the *Service des Mines* or by an association recognised by that department ; but an exception was allowed in the case of French machines constructed according to a type approved already and accompanied by the constructor's certificate that they conformed to that type. Machines used for flying at aerodromes, unless they took pupil-pilots into the air, were excepted from the regulation which required a certificate of navigability. The International Convention drafted at the Paris Conference in 1910

## Notes on "Civil Aviation"

provided for a certificate of navigability issued or authenticated by the State whose nationality the aircraft possessed. So, too, the rules proposed by the Syndicat General de l'Aviation in April, 1910, made a permis de navigation ^ as well as a permis de conduire (pilot's certificate or licence), necessary for flights over " agglomerations " (towns, villages, etc.). ^ The Law of 15 May, 1913, of the State of Massachusetts required all aircraft except those used for experiments in aerodromes to be examined by an official of the Highway Commission, registered, and assigned a number : the pilot had also to be licensed."

Serbian official Regulations of 21 February- 16

March, 1913, required both the aircraft and the pilot to be certificated ;  
" such machines," says Article 2 of the Regulations, " must be absolutely safe and cannot be used without a permit from the Minister of the Interior," and Article 4 adds that " The pilot must possess a certificate of capability delivered by the Minister of War.

Certification of Passenger-carrying Aircraft :

Apart from flights over " agglomerations," the rules of the Syndicat General drafted in 1910 made a pilot's licence necessary where a machine carried passengers, and there *has lately been a tendency to limit the requirement of a certificate of navigability to passenger-carrying aircraft.*

In the debate in the House of Commons in February, 1919, Sir Fortescue Flannery urges that that "*as the Board of Trade protects the public by inspecting ships and railways, so it should intervene in the public interest to inspect aircraft, test materials, and examine designs*". This view was opposed by Colonel Moore-Brabazon, who held that "commercial aviation" would of itself insist on security, and that the proper body to regulate and inspect the machines was not any Government organisation, but such a society as " Lloyd's."

A Lloyd's Register for Aircraft

The difficulty is that *the public require protection from flying-machines not only in the capacity of passengers but in the capacity of normal, earth-hugging citizens as well* ; and that the establishment of a Lloyd's Register for the air will require a considerable time to materialise.

The idea of such a Register is not new.

In 1910 Zaharoff, that benefactor of aviation, gave 50,000 francs *for the study of the prevention of flying accidents* and, incidentally, *of the best means of establishing a " Bureau Veritas " for the air*, the Bureau Veritas being *the French equivalent of the British Lloyd's*, i.e., an organisation *which secures the sound construction and continued sea-worthiness of ships.*

M. Locket's conclusion was that "the best guarantee of airworthiness was the pilot's own interest in preserving his life"  
*Perhaps in this he went too far.*

*To rely upon the caution and judgment of a young airman, perhaps of an abnormally optimistic temperament, in such a matter could not be justified where passenger carrying aircraft are in question.*

At the Paris Conference of 1910 the Italian Minister of War proposed that *aircraft should be inspected annually* by a special technical commission. An annual inspection for aircraft would be almost useless. *The Safety Certificate which is required for ships under Article 57 of the Convention on Safety of Life at Sea is valid only for twelve months* (paragraph 59), but *the conditions are entirely different where aircraft are in question. If there is not a practically daily inspection, an inspection after so many " flight hours " should be the rule.*

The British "Aerial Navigation Regulations, 1919" require the pilots, navigators, and engineers of passenger or goods aircraft to pass a medical examination under the direction of the Air Ministry and to obtain a certificate of competency (which, in the

## Notes on “Civil Aviation”

case of pilots and navigators, is issued by the Air Ministry itself, as a preliminary to the licence), as well as, in the case of pilots, to produce proof of recent flying experience on the class of machine for which the licence is required.

*Licences* for pilots of other than passenger or goods aircraft *are given* without medical examination, but *competency has to be established*.

### INTERNATIONAL CONVENTION - 1919

a special Aeronautical Commission of the Peace Conference, which had its origin in the Inter-Allied Aviation Committee created in 1917, was formed on 6 March 1919 under the auspices of the Peace Conference. The countries represented at the Commission were: Belgium, Brazil, the British Empire, Cuba, France, Greece, Italy, Japan, Portugal, Romania, the Kingdom of the Serbs, Croats and Slovenes, and the United States <sup>141</sup>. At the first meeting, the Commission agreed to produce a set of basic principles in preparing the Convention and its Annexes; it established three Sub-Commissions which were legal, technical, and military. These three were aided by draft conventions submitted by France, Great Britain, and the United States; Italy submitted a draft proposal for aerial navigation laws. The Convention Relating to the Regulation of Aerial Navigation, was initially signed by 27 States on 13 October 1919. 1 June 1922, fourteen instruments of ratification (the British Empire with its Dominions counted for 7 States: Great Britain, Australia, Canada, India, Ireland, New Zealand, and Union of South-Africa) were deposited with the French Ministry of the Foreign Affairs; hence, the Convention and ICAN could enter into force forty days later, that is to say on 11 July 1922. ICAN possessed administrative, legislative, executive and judicial powers, as well as being an advisory body and a center of documentation. The provisions of the Convention became part of the national legislation of the Contracting States and proved to be an inspiration to the development of national law in Europe. The work of the ICAN and its sub-commissions proved to be very helpful in the drafting of the technical annexes to the Chicago Convention of 1944.

### CONVENTION RELATING TO INTERNATIONAL AIR NAVIGATION, 1919.

Annexes.

Annex A.—The Marking of Aircraft.

Annex B.—Certificates of Airworthiness.

Annex C.—Log Books.

Annex D.—Rules as to Lights and Signals.—Rules of the Air.

Annex E.— Minimum Qualifications necessary for obtaining Certificates as Pilots and Navigators.

Annex F.—International Aeronautical Maps and Ground Markings. {Not given here.}

Annex G.—Collection and Dissemination of Meteorological Information. {Not given here.}

Annex H.—Customs

### GENERAL PRINCIPLES.

#### Article 1

The contracting States recognise that every State has complete and exclusive sovereignty in the air space above its territory and territorial waters.

#### Article 2.

Each contracting State undertakes in time of peace to:

A. accord freedom of innocent passage above its territory and territorial waters, as well as

B. accord freedom of innocent passage above the territories and territorial waters of its Colonies

to the aircraft of the other contracting States, provided that the conditions established in this Convention are observed.

All regulations made by a contracting State as to the admission over its territory of the aircraft of the other contracting States shall be applied without distinction of nationality.

### ANNEX B : CERTIFICATES OF AIRWORTHINESS

The following main conditions govern the issue of certificates of airworthiness :-

1. The design of the aircraft in regard to safety shall conform to certain standard minimum requirements.

2. A satisfactory demonstration must be made in flying trials of the actual flying qualities of the type of aircraft examined, provided that machines subsequently manufactured which conform to the approved type need not be subject to such trials. The trials shall conform to certain standard minimum requirements.

3. The construction of every aircraft with regard to workmanship and materials must be approved. The control of the construction and of the tests shall be in accordance with certain standard minimum requirements.

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<sup>141</sup> [https://www.icao.int/secretariat/PostalHistory/1919\\_the\\_paris\\_convention.htm](https://www.icao.int/secretariat/PostalHistory/1919_the_paris_convention.htm)

## Notes on "Civil Aviation"

4. The aircraft must be equipped with suitable instruments for safe navigation.

5. The standard minimum requirements (of AIRWORTHINESS) of paragraphs I to 3 inclusive shall be fixed by the International Commission for Air Navigation. Until they have been so fixed each contracting State shall determine the regulations under which certificates of airworthiness shall be granted or remain valid.

### ANNEX C : Log Books

#### II : AIRCRAFT LOG.

This is obligatory only in the case of aircraft carrying passengers or goods for hire, and shall contain the following particulars :-

- (a) Category to which the aircraft belongs ; its nationality and registration marks ; the full name, nationality and residence of the owner ; name of maker and the carrying capacity of the aircraft.
- (b) Type and series number of engine ; type of propeller showing number, pitch, diameter and maker's name.
- (c) Type of wireless apparatus fitted.
- (d) Table showing the necessary rigging data for the information of persons in charge of the aircraft and of its maintenance.
- (e) A fully detailed engineering record of the life of the aircraft, including all acceptance tests, overhauls, replacements, repairs and all works of a like nature.

#### III : ENGINE LOG.

This is obligatory only in the case of engines installed in aircraft carrying passengers or goods for hire, and in such cases a separate log book shall be kept for each engine and shall always accompany the engine. It shall contain the following particulars :

- (a) Type of engine, series number, maker's name, power, normal maximum revolutions of engine, date of production and first date put into service.
- (b) Registration mark and type of aircraft in which the engine has been installed.
- (c) A fully detailed engineering record of the life of the engine, including all acceptance tests, hours run, overhauls, replacements, repairs, and all work of a like nature.

ch 3 : certificates of airworthiness and competency.

### Article 11 : Certificates of airworthiness for Air-Craft

Every aircraft engaged in international navigation shall, in accordance with Annex B, be provided with a certificate of airworthiness issued or rendered valid by the State whose nationality it possesses.

### Article 12 : Certificates for commanding officer, pilots, engineers and other members of the operating crew

The:-

- 1. commanding officer,
- 2. pilots,
- 3. engineers; and
- 4. other members of the operating crew

of every aircraft shall, in accordance with Annex E, be provided with :-

- A. certificates of competency and
- B. licences

issued or rendered valid by the State whose nationality the aircraft possesses.

### Article 13 : Certificates of airworthiness and of competency and licences issued or rendered valid by the State whose nationality the aircraft possesses

In accordance with the regulations established by Annex B and Annex E and hereafter by the International Commission for Air Navigation :

- 1. Certificates of airworthiness
- 2. Certificates of competency and
- 3. licences

issued or rendered valid by the State whose nationality the aircraft possesses shall be recognised as valid by the other States.

Each State has the right to refuse to recognise for the purpose of flights within the limits of and above its own territory certificates of competency and licences granted to one of its nationals by another contracting State.

UK : AIR NAVIGATION REGULATIONS, 1919 : Arrangement of Regulations.

Regulation.

1. General conditions of flying.
2. Additional conditions in certain cases.
3. Reference to schedules.
4. Aerodromes.
5. General safety provisions.
6. Production of licences, certificates, and log-books for inspection.
7. Right of inspection of and access to aerodromes and factories.
8. Exceptions,
9. Foreign aircraft.
10. Penalties.
11. Power to cancel or suspend licences and certificates.
12. Interpretation.
13. Saving.
14. Short title.

Schedules.

- I. Registration of aircraft.
- II. Licensing of personnel.
- III. Certificates of airworthiness for passenger aircraft and periodical overhaul and examination of such aircraft.
- IV. Registration and nationality marks.\*
- V. Log-books.
- VI. Prohibited areas.
- VII. Rules as to Hghts and signals and rules of the air.\*
- VIII. Rules as to aircraft arriving in or departing from the United Kingdom.

ORDER OF THE SECRETARY OF STATE UNDER  
THE AIR NAVIGATION ACTS, 1911 TO 1919.

In pursuance of the powers conferred upon me by the Air Navigation Acts, 1911 to 1919, and all other powers enabling me in that behalf, I, the Right Honourable Winston Spencer Churchill, one of His Majesty's Principal Secretaries of State, by order make the following regulations :

—  
I. General Conditions of Flying.—No aircraft shall fly within the limits of the British Islands and the territorial waters adjacent thereto unless the following conditions are complied with :

- 
- (1) The aircraft shall be registered in the prescribed manner :
  - (2) The aircraft shall bear the prescribed registration and nationality marks, affixed or painted on the aircraft in the prescribed manner :
  - (3) The personnel of the aircraft shall be licensed in the prescribed manner :
  - (4) There shall be carried in the aircraft

- 
- (a) the certificate of registration ; and
  - (b) the licence of any member of the personnel who is required to be licensed :
  - (5) The provisions of these regulations as to general safety, and the rules as to lights and signals and rules of the air, as set out in these regulations, shall

be duly complied with :

(6) No mails shall be carried without the consent in writing of the Postmaster-General, and no wireless apparatus shall be installed or worked except under and in accordance with a licence granted by the Postmaster-General, containing such conditions as may be approved by the Secretary of State :

(7) The aircraft shall not fly over any prohibited area as defined by these regulations :

Provided that

—  
(a) the requirements of this regulation as to registration and as to the bearing of registration and nationality marks shall not apply to aircraft built for the purpose of experiment, and flown for the purpose of experiment or test only within three miles of an aerodrome or aircraft factory or in accordance with such directions (if any) as may be given by the Secretary of State ; and (6) the requirements of this regulation as to licensing of personnel shall not apply within the precincts of an aerodrome in the case of personnel under instruction or of aircraft flying for experimental purposes.

2. Additional Conditions in Certain Cases.—Without prejudice to the last foregoing regulation

—  
(i) A passenger aircraft carrying passengers shall not

—  
(a) fly within the limits aforesaid unless it has been certified in the prescribed manner as airworthy, and the prescribed conditions as to airworthiness, periodical overhaul, and examination before each flight are complied with, and also the prescribed certificates in relation to airworthiness are carried in the aircraft ; or

(b) use as a regular place of departure or place of landing any place other than a licensed aerodrome, or a Royal Air Force aerodrome or aerodrome under the control of the Secretary of State approved for the purpose by the Secretary of State :

(2) A passenger or goods aircraft shall not fly within the limits aforesaid unless there are carried in the aircraft the prescribed log-books, accurately kept up to date in the prescribed form and manner :

(3) An aircraft arriving in or departing from the United Kingdom shall comply with the provisions of these regulations applicable to such a case.

3. Reference to Schedules.—(i) The provisions in the schedules to these regulations shall have effect as part of these regulations, and shall be duly observed by all persons concerned in the cases to which they relate, that is to say :-

Schedule. Subject matter.

I. Registration of aircraft.

II. Licensing of personnel.

III. Certificates of airworthiness for passenger aircraft, and periodical overhaul and examination of such aircraft.

IV. Registration and nationality marks.



V. Log-books.

VI. Prohibited areas.

VII. Rules as to lights and signals and rules of the air.

VIII. Rules as to aircraft arriving in or departing from the United Kingdom.

(2) The Secretary of State may, if he thinks fit, issue directions for the purpose of supplementing or giving full effect to the provisions of the above schedules, or for any purpose for which provision is under these regulations to be made by direction of the Secretary of State.

4. Aerodromes.—(i) No place in the British Islands shall be used as an aerodrome or as a regular place of landing or departure by passenger aircraft carrying passengers, unless it has been licensed for the purpose by the Secretary of State, and any conditions of the licence are complied with.

(2) There shall be kept exhibited in a conspicuous place at all aerodromes used for the landing or departure of passenger or goods aircraft, a tariff of charges in such form and on such scale as may be directed or approved by the Secretary of State.

(3) In the case of any contravention of or failure to comply with this regulation, the proprietor of the aerodrome shall be deemed to have acted in contravention of or, as the case may be, failed to comply with these regulations.

(4) This regulation shall not apply to Royal Air Force aerodromes or aerodromes under the control of the Secretary of State, the use of which has been sanctioned by the Secretary of State; provided that any directions of the Secretary of State as to the use of such aerodromes are complied with.

5. General Safety Provisions.—(i) An aircraft shall not fly over any city or town except at such altitude as will enable the aircraft to land outside the city or town should the means of propulsion fail through mechanical breakdown or other cause:

Provided that this prohibition shall not apply to any area comprised within a circle with a radius of one mile from the centre of a licensed aerodrome or of a Royal Air Force aerodrome, or of an aerodrome under the control of the Secretary of State.

(2) No person in any aircraft shall

- 
- (a) carry out any trick flying or exhibition flying over any city or town area or populous district; or
- (b) carry out any trick flying or exhibition flying over any regatta, race meeting, or meeting for public games or sports, except where specially arranged for in writing by the promoters of such regatta or meeting; or
- (c) carry out any flying which by reason of low altitude or proximity to persons or dwellings is dangerous to public safety; or
- (d) drop, or cause or permit to be dropped, from the aircraft any article except ballast as authorised by the rules of the air as set out in these regulations.

6. Production of Licences, Certificates and Log-books for Inspection.—(i) Any member of the personnel of an aircraft

shall on demand produce his Licence for the inspection of any person authorised for the purpose by the Secretary of State.

(2) The owner and person in charge of any aircraft shall, on demand, produce for the inspection of any person authorised for the purpose by the Secretary of State, any certificates or licences relating to the aircraft, and also, in the case of passenger or goods aircraft, any of the prescribed logbooks.

7. Right of Inspection of and Access to Aerodromes and Factories.—(i) Any person authorised by the Secretary of State for the purpose shall have the right of access at all reasonable times to any aerodrome for the purpose of inspecting the same, or to any place to which access is necessary for the purpose of carrying out his powers and duties under these regulations.

(2) All aircraft belonging to or employed in the service of His Majesty? shall have at all reasonable times the right of access to any licensed aerodrome.

(3) During the construction of a passenger aircraft any person authorised by the Secretary of State shall at all times during working hours have the right of access, for purposes of inspection, to that portion of the shops in which parts are being manufactured or assembled, and to drawings of the parts under inspection, whether at the works of the main contractor or of sub-contractors.

8. Exceptions.—These regulations do not (except where otherwise expressly stated) apply

—  
[a] to military aircraft belonging to or employed in the service of His Majesty ; or

(6) to any aircraft or to any persons if and to such extent as such aircraft or persons may be excepted from these regulations, or any of them, by direction of the Secretary of State on the recommendation of a Government Department.

9. Foreign Aircraft.—The provisions of these regulations as to

—  
(a) registration of aircraft ;  
(b) licensing of personnel ;  
(c) airworthiness ;  
(d) log-books ; and  
(e) wireless apparatus ;  
shall not apply to foreign aircraft :  
Provided that

—  
(i) no foreign military aircraft shall fly over or land in the British Islands or the territorial waters adjacent thereto except on the express invitation or with the express permission of His Majesty or of a Government Department, but any such aircraft landing on such invitation or with such permission shall be exempt from these regulations to such extent and on such conditions as may be specified in the invitation or permission ; and  
(ii) where any foreign aircraft, after first landing in the British Islands, flies over any part thereof except

in such manner as may be necessary in order to proceed to a foreign destination, and the provisions of these regulations shall apply to that aircraft unless there are carried in the aircraft, and produced for inspection as and when required by the Secretary of State, certificates, licences, and logbooks issued by the responsible authority in the country to which the aircraft belongs, complying substantially with the provisions of these regulations, and unless (in the case of a passenger aircraft) the conditions of the aircraft from the point of view of the safety of the passengers and personnel correspond substantially with the particulars contained in the certificates produced.

10. Penalties.—(i) Where any aircraft flies in contravention of, or fails to comply with, these regulations or any provision thereof, the owner of the aircraft, and also the pilot or commander, shall be deemed to have contravened or, as the case may be, failed to comply with these regulations : Provided that it shall be a good defence to any proceedings for contravention or failure to comply with these regulations if the contravention or failure is proved to have been due to stress of weather or other unavoidable cause.

(2) If any person obstructs or impedes any person acting under the authority of the Secretary of State in the exercise of his powers and duties under these regulations, such firstmentioned person shall be deemed to have acted in contravention of these regulations.

(3) Any person contravening or failing to comply with these regulations or any provision thereof is liable to imprisonment for a term not exceeding six months or to a fine not exceeding two hundred pounds, or to both such imprisonment and fine.

(4) Any aircraft which flies or attempts to fly over a prohibited area is liable to be fired on in accordance with section two of the Aerial Navigation Act, 1913, and the provisions of these regulations relating thereto.

(5) If any person in any aircraft is guilty of any act of espionage to which the provisions of section one of the Official Secrets Act, 1911, apply, he is liable to penal servitude for a term not exceeding seven years.

11. Power to Cancel or Suspend Licences and Certificates.—(

i) The licence of any member of the personnel of an aircraft, or the licence of any aerodrome, may be cancelled or suspended by the Secretary of State on sufficient ground being shown to his satisfaction, after due inquiry and his decision shall be final

:

Provided that in special cases the Secretary of State may suspend any such licence temporarily and provisionally pending the holding of an inquiry.

(2) Any certificate relating to the airworthiness of an aircraft may be cancelled or suspended by the Secretary of State if he is satisfied that reasonable doubt exists as to the safety of the aircraft in question, or of the type to which the aircraft in question belongs.

(3) Where any person is convicted of any contravention

## Notes on "Civil Aviation"

or failure to comply with these regulations in respect of any aircraft, the Secretary of State may cancel or suspend the certificate of registration of that aircraft.

12. Interpretation.—In these regulations, unless the context otherwise requires,

—

" Aircraft " includes airships and flying machines, all balloons, whether fixed or free, and kites ;

" Airship " means an aircraft lighter than air and having means of propulsion ;

" Balloon " means an aircraft lighter than air and having no means of propulsion ;

" Flying machine " includes aeroplanes, seaplanes, flying boats, and other flying machines heavier than air and having means of propulsion ;

" ^ Military aircraft " includes naval, military, and airforce aircraft ;

" Passenger aircraft " and " goods aircraft " mean respectively aircraft intended for carrying passengers, or goods (including mails), for hire or reward, and include respectively aircraft on which passengers or goods are actually so carried ;

" Personnel " (in relation to any aircraft) includes any pilot, commander, navigator, and engineer, and any operative member of the crew ;

" Aerodrome " means any definite and limited ground or water area intended to be used and capable of being used, either wholly or in part, for the landing or departure of aircraft ;

" Proprietor of an aerodrome " includes any person responsible for the management thereof ;

" Licensed aerodrome " means an aerodrome licensed under these regulations ;

" Prescribed " means prescribed by these regulations or by directions of the Secretary of State thereunder ;

" Prohibited area " means any of the areas referred to in Schedule VI. of these regulations ;

" Secretary of State " includes, in relation to any purpose of these regulations, any person authorised by the Secretary of State for that purpose.

The Interpretation Act, 1889, applies for the purpose of the interpretation of these regulations as it applies for the purpose of the interpretation of an Act of Parliament, and as if these regulations were an Act of Parliament.

13. Saving.—Nothing in these regulations shall be construed as conferring any right to land in any place as against the owner of the land or other persons interested therein, or as prejudicing the rights or remedies of any person in respect of any injury to persons or property caused by any aircraft.

14. Short Title.—These regulations may be cited as the Air Navigation Regulations, 1919.

Winston S. Churchill,  
Air Ministry, London, {one of His Majesty's principal Secretaries of State}.  
30 th April, 1919.

SCHEDULES (Rules) to the United Kingdom Air Navigation Regulations, 1919

## Notes on "Civil Aviation"

### SCHEDULE I : Registration of Aircraft.

1. Certificates of registration shall be granted by the Secretary of State, and upon registration there shall be assigned to the registered aircraft a registration mark.
2. The applicant, unless the Secretary of State in special cases otherwise allows, must be a British subject, or in the case of a body corporate must be registered and have its principal place of business in the United Kingdom.
3. Application for registration shall be made to the Secretary, Air Ministry.
4. The fee to be charged for registration will be one guinea.
5. Upon any change of ownership of registered aircraft, the certificate of registration shall lapse, but a fresh certificate may be applied for by the new owner.

### SCHEDULE II : Licensing of Personnel.

#### Licensing Authority.

1. Licences shall be granted by the Secretary of State. Applications therefor shall be made to the Secretary, Air Ministry.

#### Pilots.

2. A person applying for a pilot's licence to fly passenger or goods aircraft will be required to:-
  - (a) pass a medical examination carried out under the control of the Secretary of State ;
  - (b) produce a certificate of competency issued by the Secretary of State, or be qualified as a Royal Air Force pilot ;
  - (c) submit proof of recent reasonable flying experience on the class of machine for which the licence is required, or failing such proof undergo practical tests.
3. A person applying for a pilot's licence to fly machines other than passenger or goods aircraft must either be qualified as a Royal Air Force pilot, or produce a certificate of competency issued by the Secretary of State. Navigators.
4. A person applying for a licence to navigate passenger or goods aircraft will be required to :-
  - (a) pass a medical examination carried out under the control of the Secretary of State ;
  - (h) produce a certificate of competency issued by the Secretary of State.

#### Engineers.

5. A person applying for a licence to be engaged as engineer on passenger or goods aircraft will be required to :-
  - (a) pass a medical examination carried out under the control of the Secretary of State ;
  - (b) submit proof of sufficient knowledge and experience in the management of aircraft engines ;
  - (c) undergo, if necessary, practical and theoretical tests.

#### Other Persons.

6. Persons applying for a licence in any other capacity than those above specified must comply with such conditions as may be directed by the Secretary of State. General.
7. Holders of licences may be required from time to time to undergo further medical examinations carried out under the control of the Secretary of State.
8. Licences shall remain valid for the following periods :-  
Pilots' licences - - - 6 months,  
Other licences - - - 12 months,  
and shall not be valid unless endorsed by the Secretary of State at those intervals.
9. The fee to be charged in respect of each licence issued and in respect of each such endorsement as aforesaid shall be five shillings.

In the event of any applicant being required to undergo such practical tests as are specified in paragraphs 2 (c) and 5 (c) above, a further fee of one guinea will be charged.

### SCHEDULE III.

#### Certificates of Airworthiness for Passenger Aircraft AND Periodical Overhaul and Examination of SUCH Aircraft.

#### General.

1. A certificate of airworthiness in respect of one aircraft of any type (hereinafter referred to as "a type aircraft " will be issued by the Secretary of State in accordance with the conditions set out in this schedule at a charge of five guineas,
2. After the issue of a certificate of airworthiness to a type aircraft, any further aircraft of that "Type" will be inspected for airworthiness by employees of the constructor, under arrangements approved by the Secretary of State, and if the aircraft in respect of which a certificate of airworthiness is desired conforms in all essential respects with the type aircraft, and is of

## Notes on "Civil Aviation"

satisfactory workmanship and materials, a certificate of airworthiness will be issued in respect of such aircraft by the Secretary of State at a charge of one guinea :

Provided that the Secretary of State may take steps to test the inspection made by the employees of a constructor, and if such test inspection, in his opinion, warrants such a course, may order a further inspection to be carried out by any person or persons duly authorised by him, and to issue or refuse a certificate, as he may decide, after such inspection, or to refuse to issue certificates of airworthiness in respect of further aircraft of the same type as that subjected to such test inspection that have been or may be constructed by the particular constructor.

3. Licences to competent persons for the purposes of this schedule shall be granted by the Secretary of State on compliance with such conditions as he may direct.

### Type Aircraft.

4. A certificate of airworthiness will not be granted for any type of passenger aircraft until the following conditions stipulated below have been fulfilled :

- (a) The design has been approved by the Secretary of State in regard to safety ;
- [b] The construction has been so approved in regard to workmanship and material used ; and
- (c) A satisfactory demonstration in accordance with the directions of the Secretary of State has been made in flying trials that the aircraft is safe for the purpose for which it is intended.

### Periodical Overhaul.

5. All passenger aircraft must be inspected, overhauled and certified as airworthy by competent persons appointed by the owners or users of them, and licensed for the purpose under this schedule, at such times as the Secretary of State may direct, and such certificate or certificates must be produced to the Secretary of State on demand.

6. Aircraft inspected, overhauled, or certified as provided in the foregoing paragraph may be inspected by authorised representatives of the Secretary of State, and the Secretary of State is entitled under these regulations to cancel or suspend the certificate of airworthiness of any aircraft deemed to be unsafe as a result of such inspection.

### Examination before each Flight.

7. No passenger aircraft carrying passengers shall on any day proceed on any journey unless it has previously been inspected at least once on that day by a competent person licensed for the purpose under this schedule, who shall not be the pilot of the particular machine.

8. If such competent person is satisfied that the aircraft is fit in every way for the flight or flights proposed, he shall sign in duplicate a certificate to that effect, which certificate shall be countersigned by another person in the employment of the owner, giving the time and date of such certification. For this purpose the counter-signature of the pilot may be accepted.

9. One copy of each certificate will be retained by the owner of the aircraft, and the duplicate copy must be carried in the aircraft.

10. *The pilot will be responsible for seeing that the aircraft, before commencing any flight*, is, in his opinion, in a satisfactory condition and does not carry more than the load specified in the certificate of airworthiness, and must sign a certificate to that effect.

## SCHEDULE IV.

### Registration and Nationality Marks.

[The British regulations on this subject are identical in substance with those contained in paragraphs II to VII, inclusive, of Annex A, " The Marking of Aircraft," of the International Convention—see Appendix I—and are therefore omitted here.]

## SCHEDULE V.

### Log-books.

1. Log-books shall take the form of an aircraft log-book, an engine log-book, a journey log-book, and a signal logbook.

If more than one engine is fitted a separate log-book shall be provided for each engine.

2. Each log-book shall be self-contained, but aU log-books shall be kept together in the aircraft in a waterproof bag of a pattern authorised by the Secretary of State.

3. The log-books shall conform in all essentials to the patterns authorised by the Secretary of State, and shall contain such information and particulars as the Secretary of State may direct.

## SCHEDULE VI.

### Prohibited Areas.

I. Each of the places named or described in the following Ust, with the land and territorial waters surrounding such

## Notes on "Civil Aviation"

place to a distance of three statute miles in all directions from its boundary, shall be a prohibited area :-

2. The prohibited areas are more particularly shown in a map issued for the purpose by the Secretary of State.
3. The officer to give the signals and take the action mentioned in section 2 of the Aerial Navigation Act, 1913, shall be a commissioned officer in His Majesty's Naval, Military, or Air Forces.
4. The signals which may be given when an aircraft flies or attempts to fly over any of the prohibited areas shall be as follows :

By day : three discharges, at intervals of not less than ten seconds, of a projectile showing smoke on bursting.

By night : three discharges, at intervals of not less than ten seconds, of a projectile showing red stars or red lights.

5. On such a signal being given, the aircraft shall immediately land at the nearest practicable spot ; provided that, if it be approaching or flying over any prohibited area, it shall not, in descending, advance further towards or into the area.

6. If an aircraft is unable to land immediately in response to the signal, owing to stress of weather or other unavoidable cause, it shall make the following signal :

By day : show, from the place where they can be most clearly seen from below, a red triangular flag, together with two black balls superimposed vertically one above the other ;

By night : wave a white light, at the same time extinguishing the side lights ;

and shall, as soon as possible, land at the nearest practicable spot in the United Kingdom.

SCHEDULE VII : Rules as to Lights and Signals and Rules of the Air.

[The British rules are identical in substance with those contained in Annex D of the International Convention Appendix I]

SCHEDULE VIII : Rules as to Aircraft arriving in or departing from  
THE United Kingdom.

Preliminary.

I.—(i) For the purposes of the rules in this schedule the following aerodromes are appointed aerodromes, that is to say :

New Holland, Lincolnshire ;

Hadleigh, Suffolk ;

Lymington, Kent ;

Hounslow, Middlesex.

Provided that the Secretary of State may by directions add any aerodrome to the list of appointed aerodromes or remove any aerodrome from that list.

(2) For the purposes of the rules in this schedule:-

" Importer " has the same meaning as in the Customs Consolidation Act, 1876 ;

" Commissioners " means Commissioners of Customs and Excise ;

" Examination station " means a place at an appointed aerodrome approved by the Commissioners as an examination station ;

" Pilot " includes person in charge.

Other expressions have the same meaning as in the general provisions of these regulations.

Arrival at and departure from Appointed Aerodromes.

2. No aircraft entering the United Kingdom from abroad shall land for the first time in the United Kingdom except at an appointed aerodrome : Provided that this rule shall not apply where an aircraft is compelled to land before arriving at an appointed aerodrome, owing to accident, stress of weather, or unavoidable cause, in which event the procedure laid down in rule 21 (hereafter) will be followed.

3. No aircraft shall fly to a place outside the United Kingdom unless it has departed from an appointed aerodrome.

4.—(i) No person in any aircraft entering the United Kingdom shall carry or allow to be carried in the aircraft:-

(a) any goods the importation of which is prohibited by the laws relating to Customs ;

(b) any mails, except with the permission in writing of the Postmaster-General.

(2) No person in any aircraft entering the United Kingdom shall break or alter any seal placed upon any part of the aircraft or upon any goods therein by a Customs officer at the aerodrome from which he departed for the United Kingdom.

5. No aircraft shall enter or leave the United Kingdom, having any secret or disguised place adapted for concealing goods.

6. The pilot of any aircraft arriving at an appointed aerodrome from a place outside the United Kingdom shall, on landing, forthwith take his aircraft to the examination station at that aerodrome ; provided that a pilot shall not be deemed to have contravened or failed to comply with this rule if he proves that circumstances over which he had no control prevented him from taking his aircraft to the examination station, and that, after the report required by rule 7

## Notes on "Civil Aviation"

(hereunder) had been duly made by him, all goods carried in the said aircraft were removed to the examination station in the presence of an officer of Customs and Excise or some person duly authorised by the Secretary of State.

7. Within twenty-four hours after the landing at any appointed aerodrome of an aircraft from a place outside the United Kingdom the pilot shall:-

(a) make a report to the proper officer of Customs and Excise in the form prescribed by the Commissioners ; and

(b) truly furnish the several particulars required by such form ; and

(c) deliver to such officer with such report his log-book, manifest, and declaration of the goods on board his aircraft signed by the proper Customs officer at the aerodrome from which he departed for the United Kingdom ; and

(d) land at such aerodrome for examination of baggage all passengers carried in such aircraft, and, after making such report, shall produce, and, if required to do so, shall land, all goods in such aircraft for examination.

8. If at any aerodrome or other place within the United Kingdom goods or passengers are loaded for conveyance by air to an appointed aerodrome, the pilot shall obtain from the proprietor of the aerodrome of departure a certificate of departure in the form prescribed by the Secretary of State and the Commissioners, and on arriving at the appointed aerodrome the aircraft, and all goods and passengers carried therein, shall, on production of such certificate, be exempt from inspection by an officer of Customs and Excise, unless such officer has reason to suspect that the aircraft has, since the issue of such certificate, called at a place outside the United Kingdom.

9. The pilot of every aircraft in which goods are to be exported shall, before any goods be taken on board, deliver to the proper officer of Customs and Excise a notice of departure for a foreign destination in the form prescribed by the Commissioners, in which shall be truly stated the particulars required by such form,

10.—(i) Every pilot of an aircraft carrying goods to any place outside the United Kingdom shall deliver to the proper officer of Customs and Excise at an appointed aerodrome, together with any log-books belonging to the aircraft, an application for clearance from that aerodrome in the form prescribed by the Commissioners, in duplicate, and also if the aircraft carries any goods a manifest and declaration in the form prescribed by the Commissioners declaring the goods and stores on such aircraft, and shall truly state therein the particulars required by such forms respectively ; and such forms, when signed by such officer, shall be the

clearance and authority for the aircraft to proceed to its foreign destination.

(2) No pilot shall depart in any such aircraft from the United Kingdom until he has obtained such authority, or shall, after obtaining such authority, call at any other place in the United Kingdom before proceeding to his foreign destination. Any pilot intending to land at one or more appointed aerodromes before proceeding to his foreign destination shall apply for the said clearance and authority at the last appointed aerodrome at which he lands.

### Importation, Entry, and Unloading of Goods.

11. No person importing goods in an aircraft shall bring the goods into any place in the United Kingdom other than an appointed aerodrome, or shall unload the goods from any aircraft except at an examination station (unless such goods are unloaded in the presence of an officer of the Customs and Excise under the provisions of rule 6 above) and shall not unload the goods except between such hours as the Commissioners prescribe, or remove the goods from an examination station unless the goods have first been duly entered in manner provided by these rules and produced to the proper officer of Customs and Excise and duly cleared by him.

12. No person shall remove from any aircraft any goods imported therein until the report required by rule 7 (above) has been made, and the authority of the proper officer of Customs and Excise has been obtained.

13. The importer of any goods imported in aircraft shall deliver to the collector of Customs and Excise in whose district the aerodrome of importation is situated an entry of such goods in accordance with the provisions of the Customs Acts, and shall truly furnish thereon the several particulars required by the form of entry, and shall pay to such collector all duties chargeable thereon at the times and in the manner prescribed by the said Acts ; provided that no entry shall be required in respect of diamonds or bullion or the baggage of passengers.

14. All goods imported into an appointed aerodrome in any aircraft shall be duly entered and unladen within seven days from the time of the arrival of such aircraft at that aerodrome or within such further period as the Commissioners may allow.

15. All goods imported in aircraft which have not been examined and cleared by the proper officer of Customs and Excise shall be stored in a transit shed at the appointed aerodrome, and no person shall remove such goods from the transit shed before examination and clearance by such officer.



## Notes on "Civil Aviation"

### Exportation of Goods.

16.—(i) The exporter of any goods intended for exportation in aircraft shall deliver to the proper officer of Customs and Excise at the appointed aerodrome from which such aircraft is cleared to its foreign destination, an entry in the form prescribed by the Commissioners, and shall truly state in such form the particulars hereby required ; and such form when signed by the proper officer of Customs and Excise shall be the clearance and authority for the exportation of such goods.

(2) No person shall export goods on such aircraft until such authority has been given by the proper officer of Customs and Excise.

17. No person shall without the consent of the proper officer of Customs and Excise unload from any aircraft any goods loaded thereon for exportation which have been cleared under rule 16 above, or open, alter, or break any lock or mark or seal placed by any officer of Customs and Excise on any goods in any aircraft about to depart from the United Kingdom.

### General Provisions.

18. No person shall make any signal to or from an aircraft entering or leaving the United Kingdom except such signals as are authorised by these regulations ; provided that no offence shall be deemed to be committed under this rule if the person making such signal proves that the signal was not given for the purpose of evading or of assisting any person in evading these rules.

19. If any officer of Customs and Excise in the execution of his duty boards any aircraft in any place, the pilot thereof shall not convey him in the aircraft away from such place without his consent.

20. No dutiable goods shall be removed in aircraft from the Isle of Man to Great Britain or Ireland except from an appointed aerodrome and with the consent of the proper officer of Customs and Excise.

21. If any aircraft arriving from a place outside the United Kingdom, shall land in any place other than an appointed aerodrome, the pilot shall forthwith report to an officer of Customs and Excise or police constable, and shall on demand produce to such officer or police constable the log-books belonging to the aircraft, and shall not allow any goods to be unloaded therefrom without the consent of an officer of Customs and Excise, and no passenger thereof shall leave the immediate vicinity without the consent of an officer of Customs and Excise or police constable. If such place of landing shall be an aerodrome the pilot shall forthwith report the arrival of the aircraft and the place whence it came to the proprietor of the aerodrome, and the proprietor of the aerodrome shall forthwith report the arrival of the aircraft to an officer of Customs and Excise, and shall not allow any goods to be unloaded therefrom or any passenger thereof to leave the aerodrome without the consent of such officer.

22.—(i) The proprietor of any aerodrome shall at all times permit any officer of Customs and Excise to enter and inspect his aerodrome and all buildings and goods thereon.

(2) The pilot of any aircraft shall permit any officer of Customs and Excise at any time to board and inspect his aircraft and any goods laden thereon.

(3) The importer or exporter of any goods imported or exported in aircraft shall produce such goods to the proper officer of Customs and Excise at the aerodrome of importation or exportation, as the case may be, and permit him to inspect such goods.

23. Any provisions for the time being in force of the Aliens Restriction Order or of the Defence of the Realm Regulations with respect to persons arriving in or departing from the United Kingdom by sea, shall apply to persons arriving or departing by air as if the same were herein set out, with such modifications as are necessary for adapting them to such purpose, and in particular with the substitution of " appointed " aerodrome for the approved ports specified in the Aliens Restriction Order.

24. All persons importing or exporting or concerned in importing or exporting goods, mails, or passengers into or from the United Kingdom in aircraft and all pilots of aircraft arriving in or departing from the United Kingdom shall observe and comply with the provisions of sections 53, 76, 102, 104, and 118 of the Customs Consolidation Act, 1876, as if any references in such provisions to ships or vessels and the masters or captains thereof, and to the loading or unloading of goods thereon or therefrom, included references to aircraft and the pilots thereof, and to the loading or unloading of goods thereon or therefrom, and as if references in such provisions to a quay included a reference to an examination station.

Before the war there were signs and tokens that the doctrine of sovereignty was winning the day.

## Notes on "Civil Aviation"

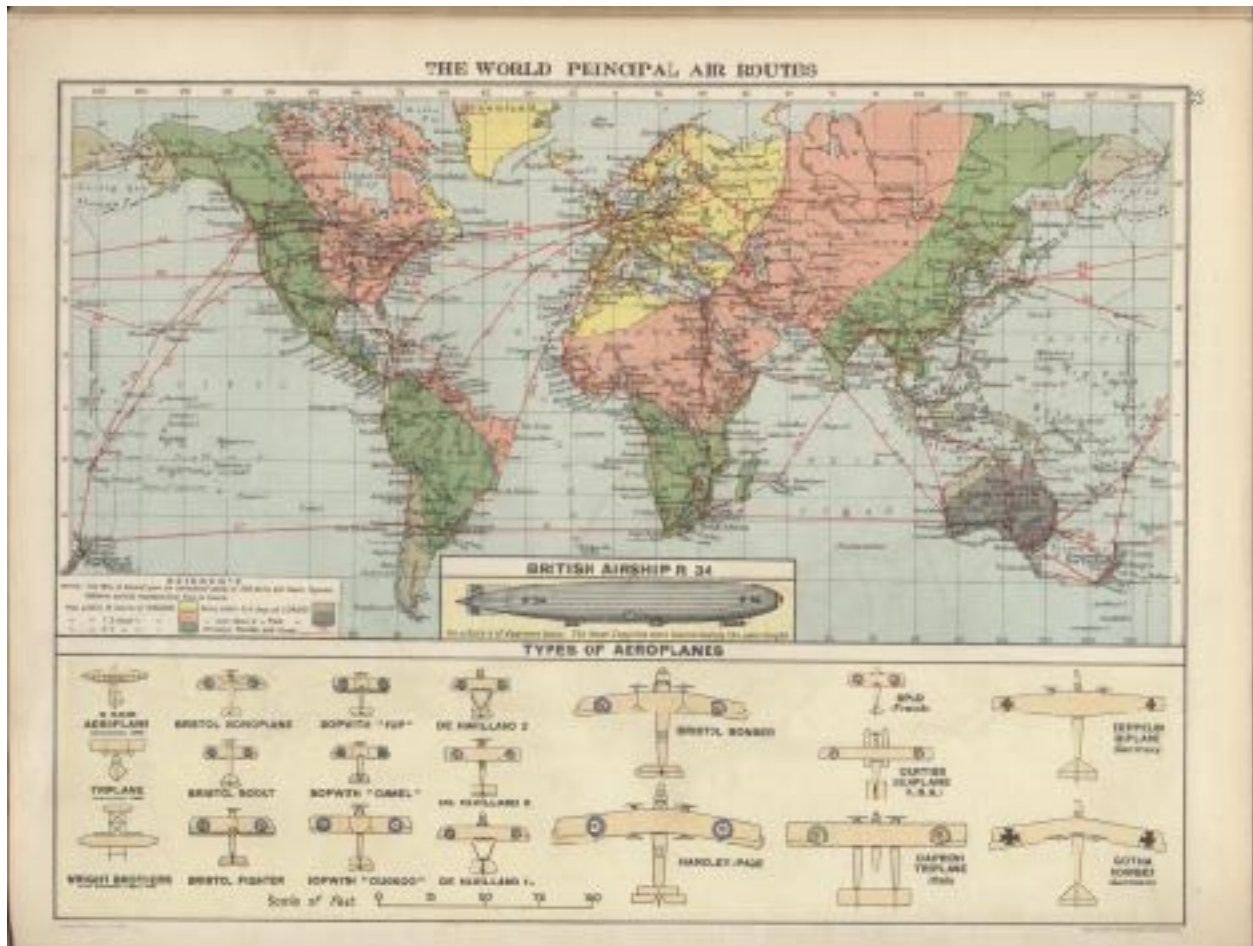
The British Aerial Navigation Acts of 1911 and 1913 assumed for Great Britain "the power to close her aerial frontiers" and regulations issued by the Home Office under those Acts forbade the passage of aircraft over great tracts of the coast-line of Great Britain.

Germany and France similarly prohibited the crossing of extensive portions of their air frontiers.

The closing of the air frontiers was the occasion of much concern to the champions of flight.

**BRITISH AVIATION 1920'S - 1930'S**

Throughout the 1920s and into the 1930s the work of the RAF was very much tied up with the development of British civil aviation: the directorate of civil aviation was, in these early days, a part of the Air Ministry. A major consideration for the RAF was that of establishing an international reputation for long-distance, high-altitude and high-speed flying so that it could develop and show its operational and technical prowess.



1924 - In order for the British Government to develop commercial air transport on an economic basis. "Civil Aviation" in the form of a government air-line was established throughout the Empire as the "Imperial Airways" along the same system of the steam-ship lines.

The R.A.F had cut its teeth for this work by operating the air mail and passenger service from London to Paris for government officials attending the Peace Conference in Paris in 1919.

The R.A.F had also operated an air mail service during WW1 to the British troops of the Army of Occupation in Germany.

Imperial Airways first major route, Cairo-Baghdad, officially launched in 1921 using DH9A's and Handley Page 0/400s The Cairo-Baghdad run became so important to the British Government that it was the first overseas sector and basis for the routes of Imperial Airways in 1927.

The routes to the Far East and the Orient were the province of the flying boats.

One of the most outstanding of all pioneering flights was that made by 4 Southampton flying boats in 1927-28.

They left Plymouth to become the nucleus of No 205 Squadron at the new RAF base in Singapore.

They flew in formation to Singapore, on to Australia and finally Hong Kong. They then flew back to Singapore - and all of these flights were "on time".

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AIR MINISTRY Air Publication 1208 - Airworthiness Handbook for Civil Aircraft VOL. II - INSPECTION

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FOREWORD - GENERAL

I. Application of volume.-

(i) *This volume of the handbook is issued as a guide to the inspection of:*

1. Type aircraft that are:
  1. designed to carry more than ten passengers for hire or reward
  2. constructed to carry more than ten passengers for hire or reward, or
  3. intended to carry more than ten passengers for hire or reward, or
2. Type aircraft that have a maximum permissible weight of more than 10,000 lb.

*It also covers the inspection of:*

1. *a modification affecting safety on its first being incorporated in any Type, or*
2. *a modification affecting safety on being incorporated in Subsequent aircraft in either of the classes indicated above.*

(ii) The handbook is intended to be read in conjunction with the Air Navigation (Consolidation) Order, 1923, and the Air Navigation Directions, 1936 (A.N.D.13) (or any Orders, Regulations or Directions replacing the same) as in force for the time being. These are purchasable from His Majesty's Stationery Office, Adastral House, Kingsway, London, W.C.2, or through any bookseller.

2. Inspection requirements.

*The general requirements stated hereunder are taken from the Air Navigation Directions, 1936 (A.K.D.13), Section II (C), para. 19. These requirements are amplified in the leaflets which form the remainder of the volume. "*

*(a) Inspection of type aircraft will be carried out by the Secretary of State, but the inspection of all details and components of such aircraft shall be carried out by the constructor, who shall provide adequate inspecting staff for this purpose. In addition, each component shall be finally inspected and approved by the Secretary of State.*

*(b) Constructors shall notify the Under Secretary of State, Air Ministry, London, W.C.2, seven days before commencing work on any part of the aircraft, the inspection of which is necessary during process of construction.*

*(c) All materials used in the construction of the aircraft shall be in accordance with the specifications approved for the type design and every batch of such material shall be proved to comply with such specification by suitable examination, sampling and testing by approved methods.*

*(d) Every detail and part must be proved by the constructor's inspecting staff referred to in (i) of this paragraph by suitable process of testing and inspection to conform strictly to the approved type design. The constructor's inspecting staff shall stamp, or otherwise provide means for the identification of, each detail and part approved by*

*them for incorporation in the aircraft, in such a way that the individual responsible for such approval can subsequently be identified.*

(e) *Only details and parts* which have been *approved in accordance with (d) of this paragraph*, or details or parts for which special "concessions" have been granted as laid down in paragraph 21, may be issued by the constructor to the shops for assembly into components.

(f) The constructor *shall maintain an efficient process inspection during the work of assembly* and record the progress of such inspection for each component. *Every component shall be finally inspected and approved by a qualified member of his inspection staff*, who shall stamp the component in such a way that *he may afterwards be identified as the person responsible*, and shall also sign the inspection record.

(g) *Operations such as* heat treatment of steels, seasoning and conversion of timber, gluing of important parts, doping, etc., *must be carried out by approved methods.*

(h) The constructor *shall ensure that all components and parts obtained* from subcontractors *have been inspected and approved in accordance with these conditions.*

(i) The constructor (of the aircraft or engine, as may be arranged) shall ensure that all engines have been inspected and approved in accordance with these conditions and have undergone, to the satisfaction of the Secretary of State, such tests as may be required by him. The constructor shall provide adequate facilities for these tests.

(j) The constructor shall satisfy the Secretary of State that the specified instruments and equipment have been manufactured, and any repairs thereto executed, under approved conditions, and

(k) The aircraft constructor shall ensure by suitable inspection that all engines, instruments and parts (including wiring for electrical equipment other than wireless apparatus) that are fitted to the aircraft are so installed as to function correctly, and, if wireless telegraphy or wireless telephony apparatus is fitted, that the installation of such apparatus, including bonding and screening, is not such as to prejudice the operation of the aircraft and is in conformity with such requirements as may have been laid down by the Secretary of State.

The individuals responsible for such inspection shall be indicated by signatures on the inspection record referred to in (vi) of this paragraph.

(l) On completion of the construction of the aircraft and of flying trials under para. 2-1, but before the carrying out of any official flying trials under para. 25, a final inspection of the aircraft as regards its fitness for flight shall be made by the Secretary of State.

(111) On completion of the whole of the inspection operations specified above, the constructor shall forward to the Secretary, Air Ministry, London, W.C.2, a summary of the inspection record of the aircraft. For this purpose, A.I.1. Form 1221 (copies of which can be obtained on application) shall be used. All the particulars required by the Form must be given."

References to handbook.-Reference to any particular portion of the handbook should be made by quoting the volume (i.e. I or II), leaflet, paragraph (or sub-paragraph) and line number.

Notices to Ground Engineers.-

Frequent references are made throughout this handbook to Notices to Aircraft Owners and Ground Engineers. A consolidated booklet of all such Notices remaining in force on the 31st December each year is issued towards the end of February of the year following.

Copies of this booklet can be purchased from His Majesty's Stationery Office or through any bookseller. Applications for copies of Notices to Aircraft Owners and Ground Engineers issued during the current year should be addressed to the Under Secretary of State, Air 1.1 (C.A.P.), London, W.C.2, and should include a statement as to the purpose for which the Notices are required.

## PART II.-BASIC PRINCIPLES OF INSPECTION

### 1. Supplies of material.

Supplies of material will normally be subject to the conditions applying in the case of aircraft intended for the Royal Air Force, i.e., their inspection, identification and release must be in accordance with such specifications and Inspection Instructions as are relevant.

### 2. Material at aircraft works.-

Material received at an aircraft works must be placed in a "bonded store" as soon as the inspector has correlated it with the release note or other evidence of prior inspection.

If for any reason this evidence is missing the material must be held in a "quarantine store" until either the release note (or its equivalent) comes to hand or the material has been completely re-inspected.

### 3. Identification of material.

A job card or similar document, indicating the relevant release note or other evidence of prior inspection, must be started when material is issued from the bonded store to the workshops.

The records of subsequent inspection shall enable the source of the material and the various inspectors concerned with any part made therefrom to be identified at any time.

### 4. Inspection.-

(i) The value of the inspection of an aircraft depends :-

(a) upon the skill and care with which each inspection operation is performed ; and

(b) upon every detail and assembly being systematically followed through from the raw material to the finished product.

(ii) The grant of a certificate of airworthiness can be recommended only when the inspector is fully satisfied that each operation in the complete series has been performed efficiently.

### 5. Inspectors' stamps.-

(i) Every inspector must be provided with stamps for marking the materials or articles which he will be called upon to inspect. The identity of the inspector must be ascertainable from these stamps.

(ii) The inspector's mark on an article or on the inspection document relating to an article signifies that the article, when examined by the inspector, was found to be in a satisfactory condition.

(iii) Before passing any article the inspector must be satisfied that :-

(a) the material complies with the requirements specified on the approved drawings (see Vol. I, Design Leaflet B.1, paras. 4 and 5) and has received the requisite process treatment;

(b) the part is dimensionally accurate and satisfactory as regards its finish;

(c) the material has not been subjected to any improper treatment and is free from defects.

(iv) The inspector must also satisfy himself that all detail parts are properly fitted and secured during the assembly of an aircraft, and, finally, that the complete aircraft is in all respects airworthy.

By direction of the Secretary of State for Air,



CANADIAN AVIATION - 1920

THE JOURNAL OF THE ENGINEERING INSTITUTE OF CANADA :

ROSE—JOHN THOBURN, of Winnipeg, Man. Born at Toronto, Ont., Sept. 4th, 1894. Educ. B.A.Sc, Toronto Univ., 1915. Oxford School of Mil. Aeronautics, 1917. 1913 (5 mos. 1914 (2 mos.) inspector, roads and pavements, Toronto; 1914 (4 mos. storage investigation, Water Power Branch, Ottawa; 1915, asst. on water power reconnaissance survey; 3 yrs. overseas with C.F.A. and R.A.F., pilot, R.A.F. (Lieut.) ; at present, junior power development engr., Hydrometric Survey of Manitoba  
References: C. H. Attwood, P. Gillespie, M. C. Hendry, J. T. Johnston, M. A. Stewart.

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Its possibilities. Reference is made to development in Great Britain and Germany.  
France. France Adopts Definite Plan to Promote Aircraft, Allen Sinsheimer.  
Automotive Industries, vol. 41, no. 14, Oct. 2, 1919, pp. 653-654. Department of Aeronautics created to supervise domestic regulations and award subsidies and premiums.  
History. Historical Account of Aviation During the War from 1914 to 1918 (Historique de l'emploi de l'aviation), J. Orthlieb. Aeronautique, vol. 1, no. 5, Oct. 1919, pp. 177-179, 3 figs. Aviation during operations at Verdun. (Continuation of serial.)  
Navigation. Air Navigation, H. E. Wimperis. Aeronautical J., vol. 23, no. 104, Aug. 1919, pp. 445-461, 10 figs. Because long experience of mariner will not apply in upper air and experience has shown insufficiency of available meteorological knowledge of air navigation, need of supporting in every possible way development of really scientific work in meteorology in every part of world, and especially study of physics of upper air is concluded.  
War Progress. The Scientific Progress of Aviation During the War, L. Bairstow. Engineering, vol. 108, no. 2806, Oct. 10, 1919, pp. 493-496, 16 figs. Including graphs indicating comparison of pressure plotting on model and full-scale biplane with Royal Air Force 14 wings, and records of pitching oscillations. Paper read before British Assn. for Advancement of Sci.

AEROPLANES

Design. The Loads and Stresses on Aeroplanes, John Case. Aeronautics, vol. 17, nos. 312, 313 and 314, Oct. 9, 10 and 23, 1919, pp. 343-347, 366-368 and 389-391, 7 figs. Oct. 9: Formulae for calculating stresses in a spar. Oct. 16: Table showing bending moment, shearing forces, stresses, etc., obtained by different methods; design of spars for bottom wing; effect of pin joint within bay. Oct. 23: Effect on movement of points of support; general theory of continuous beams.  
Engines. Details of 300-Horsepower Maybach Airplane Engine—III. Automotive Manufacturer, vol. 61, nos. 6 and 7, Sept. and Oct., 1919, pp. 21-24 and 23-25, 7 figs. Mechanical construction and design features; carburation and fuel supply system and fuel pump. Table of general data. (Concluded.)  
German Airplane Motors (Les moteurs d'aviation allemands), G. Crouvesler. Aerophile, vol. 27, nos. 17 and 18, Sept. 1-15, 1919, pp. 275-278, 6 figs.  
Siemens-Schuckert 160-hp., 11 cylinder rotary engine.  
Engine Testing. The Altitude Laboratory for the Testing of Aircraft Engines, H. C. Dickinson and H. G. Boutell. Flight, vol. 11, no. 43, Oct. 23, 1919,



pp. 1398-1404, 9 figs. Air cooling systems; jacket circulating-water cooling system; exhaust system; measurement of air now to carburetor; temperature measurements

Engine Power and Height, H. T. Tizard. Engineering, vol. 108. no. 2808, Oct. 1919, pp. 561-563, 5 figs. Examination of performance tests of airplanes and bench tests made under artificial altitude conditions in order to determine whether or not density of charge entering cylinder is proportional to density of external atmosphere. It is concluded that "no good ease can be made out at the present time for abandoning the standard method of reducing performances in favor of one which assumes that engine power is independent of atmospheric temperature." Paper read before Eng. Section of British Association for Advancement of Sci.

Afternoon Session, Thursday, January 29th.

Vice President Mitchell, who occupied the chair, called the meeting to order and asked Lieut.-Col. O. M. Biggar, Vice Chairman of the Air Board of Canada to address the meeting on the subject of aviation "The Policy of the Air Board of Canada". Col. Biggar's address is published in full in this issue of The Journal.

Frederick B. Brown opened the discussion stating that there were two gentlemen present who had made a special study of the subject and who were in a position to do so from the viewpoint of expert knowledge. He suggested that we hear from Gen. Mitchell, who had been studying the matter for twenty odd years and from Prof. McKergow, one of whose subjects at McGill University was aeronautics.

Brig.-Gen. Mitchell traced briefly the development of aerial navigation from the time of the Chicago Exhibition when he had begun to study it at which time we knew nothing about the problem of aero-dynamics or about the scientific principles underlie the aeroplane as we now have it. The stabilizing of the aeroplane had been developed in the early days of the war a very important feature of the aeroplane service was due to the fact that it was possible to keep in constant communication with headquarters. Such was the development of the aeroplane and so important was the science becoming that it would soon be necessary to consider a new section of The Institute's activities in which the automotive engineer would find a place. The Institute should also consider to what extent it would take part in this new development.

Major C. M. McKergow, Professor Mechanical Engineering, McGill University, congratulated Col. Biggar on the excellency of his address and stated that he was interested in the aeroplane rather than in aerial navigation. His work had been concerned with making the aeroplane more efficient, the engine and the materials which go to make the plane itself. As an engineer he considered there were two functions of the aeroplane which were most important, namely, for forest protection and surveying. This was now being done in Quebec with remarkable success. For exploration work, plotting out new territory and forest ranging the difficulties incidental to the use of the aeroplane for these purposes

liad been overcome. It is possible that the Federal Government may adopt these methods. He trusted that the Air Board would in their study of their problems realize that the aeroplane must be more perfect in the engine and in the parts, that an impetus should be given to research in metallurgy to develop stronger materials, to improving carburetion and ignition, or possibly eliminating them entirely in an engine, whereby the engine will be one hundred per cent efficient as regards economy and shall give one hundred percent of service, using materials that will not corrode. He believed it was within the limits of metallurgical research to develop materials of strength exceeding those we have at present and if sufficient opportunity were given to the skilled, engineer who was fond of that type of work that an engine might be developed which would eliminate the carburettor and the sparking device, which he understood gave about sixty-eight percent of all troubles in the air. It spoke well of the mechanical part of the construction that the materials, bearings, etc. gave very little trouble. He felt that this wonderful romantic thing capable of flying through the air was worthy of every engineer's earnest consideration.

Col Biggar replied that during the past three months the Air Board had been in communication with the Research Council of Canada on the subject of aeronautical research and that arrangements had been completed for the appointment of an Air Research Council in connection with the Research Council of Canada which body was holding its organization meeting next week. The Air Board would welcome suggestions with regard to directions in which research might usefully be undertaken.

The reading of his paper "The Pulp and Paper Industry" by Ferd. van Bruyssel, followed by the "Forests of Quebec" by G. C. Piche, A.M.E.I.C, Chief of Forests Service, Quebec Lands and Forests Department, concluded the afternoon session.

Taking advantage of the occasion presented by the Annual Meeting the engineering graduates of the University of Toronto held a "get together" luncheon at the Windsor Hotel at noon on Thursday with over fifty graduates present. This occasion will long be remembered by the graduates and was historic inasmuch as it saw the formation of the Engineering Alumni Association of the University of Toronto with the following officers:

—  
President, Walter J. Francis, M.E.I.C; Vice President, Dr. T. K. Thomson, M.E.I.C; Secretary, C. E. Macdonald; Council, J. M. Robertson, M.E.I.C, J. B. Challies, M.E.I.C, E. R. Gray, A.M.E.I.C, J. L. Morris, M.E.I.C, G. Reid Munro, A.M.E.I.C, W. G. Chace, M.E.I.C and W. A. Buck, A.M.E.I.C. It was decided to hold a general re-union of the Engineering Alumni Association at Toronto next October. Addresses were given by President R. A. Ross, Past President G. H. Duggan and Vice President Brig.-Gen. C. H. Mitchell.

Canada Gazette - volume 53, number 30, 24 January 1920, page 34 (2324)

**CIVIL SERVICE COMMISSION OF CANADA - AIR BOARD VACANCIES**

Post No. 1 is VACANT.

List No:

The Civil Service Commission of Canada hereby gives public notice that applications will be received from persons qualified to fill the following positions under the Air Board. It is proposed to form eligible lists for the various classes hereunder advertised, but it has not been decided which of the classes described below will be filled, or the number of appointees of any class who will be required. The tenure of office will be for three years, renewable. Provision will be made by the Air Board for insurance against injury or death due to accident while on or about air craft,

**AIR STATION SUPERINTENDENT.**

Initial Salary \$3,300 per annum.

932. An Air Station Superintendent for the Air Board at an initial salary of \$3,300 per annum which will be increased on recommendation for efficient service at the rate of \$180 per annum until a maximum of \$3,900 has been reached.

Note: If board, lodging, or ordinary clothing is supplied the value thereof shall be deducted from the above compensation.

Qualifications:

Education equivalent to university graduation: at least two years of flying experience; must hold or obtain commercial pilot's and navigator's flying machine certificates or airship pilot's and navigator's certificates; thorough knowledge of the theory of flight and the principles and practice of air navigation; wide acquaintance with all types of aircraft accessories and equipment and their use; administrative and organizing ability; good physical condition.

Duties:

Under the direction of the Director of Flying Operations of the Air Board, to have charge of an air station and to direct the work at flying sub-stations; to direct or personally undertake flying operations; to supervise the staff and be responsible for the maintenance and repair of aircraft and equipment at a flying station; to supervise the care and issue of stores; and to perform other related work as required.

**AIR SUB-STATION SUPERINTENDENT,**

Initial Salary \$2,940

Per Annum.

833. An Air Sub-Station Superintendent for the Air Board at an initial salary of \$2,940 per annum which will be increased on recommendation for efficient service at the rate of \$180 per annum until a maximum of \$3,300 has been reached. This initial salary is supplemented during the present fiscal year by the following bonus: If head of a household (irrespective of age) \$100 per annum.

Note: If board, lodging, or ordinary clothing is supplied the value thereof shall be deducted from the above compensation.

Qualifications:

Education equivalent to university graduation; two years of flying experience; must hold or obtain commercial pilot's and navigator's flying machine certificates or airships pilot's and navigator's certificates; thorough knowledge of the theory of flight, the principles and practice of air navigation, and the administration

and organization of air work ; ability to carry out flying operations ; good physical condition .

Duties :

Under direction, to have charge of an air station;  
to direct or personally to carry out flying operations ; to supervise the staff and be responsible for the maintenance and repair of aircraft and equipment at a flying station ; to supervise the care and issue of stores ; and to perform other related work as required .

## **AIR EQUIPMENT OFFICER**

Salary of \$2,400 per annum.

834. An Air Equipment Officer for the Air Board at an initial salary of per annum which will be increased on recommendation for efficient service at the rate of \$120 per annum until a maximum of \$2,400 has been reached . The initial salary is supplemented during the present fiscal year by the following bonus :  
If head of a household (irrespective of age) \$ 150 per annum.

Note : If board, lodging, or ordinary clothing is supplied the value thereof shall be deducted from the above compensation .

Qualifications :

1. Education equivalent to high school graduation  
two years of experience in charge of flying equipment  
preferably as Equipment Officer in the British Air Force ;  
Knowledge of markets, current prices, commercial  
production, and transportation facilities ; thorough  
knowledge of aircraft equipment and stores and wide  
knowledge of air station requirements ; administrative  
and organizing ability ; integrity.

Duties :

Under direction, to purchase and have charge of aircraft, engines, spares, hangars, workshop, machinery, general stores and other aircraft equipment ; to be responsible for the allocation of all such equipment  
Notes : to make arrangement for the issue, transportation, care, and maintenance of such equipment  
and to perform other related work as required .

## **AIR PHOTOGRAPHIC INSPECTOR**

Initial salary \$2,340 per annum.

835. An Air Photographic Inspector for the Air Board at an initial salary of \$2,340 per annum which will be increased on recommendation for efficient service at the rate of \$120 per annum until a maximum of \$2,700 has been reached. This initial salary is supplemented during the present fiscal year by the following bonus : If head of a household (irrespective of age) \$180 per annum.

Note :-If board, lodging, or ordinary clothing is supplied the value thereof shall be deducted from the above compensation . Qualifications :

Education equivalent to high school graduation  
two years of photographic experience in the air, pre-

ferably in a British Air Force wide experience with the various types of aerial cameras and knowledge of modern aircraft with special relation to photographic work ; supervisory ability ; good physical condition .  
DUN":

Under direction, to organize and inspect such photographic work as may be undertaken in connection with flying operations ; to have charge of photographic supplies ; to advise as to the proper types of cameras and supplies for various undertakings and supervise their proper upkeep and repair ; and to perform other related work as required .

### **AIR WIRELESS INSPECTOR.**

Initial Salary \$2,840 per annum.

1a8. An Air Wireless Inspector for the Air Board at an initial salary of \$2,840 per annum, which will be increased on recommendation for efficient service at the rate of \$120 per annum until a maximum of \$2,700 has been reached . This initial salary is supplemented during the present fiscal year by the following bonus : If head of a household (irrespective of age) \$180 per annum .

Note : If board, lodging or ordinary clothing is supplied the value thereof shall be deducted from the above compensation.

Qualifications : Education equivalent to high school graduation ; five years of experience in wireless telegraphy, two years of which shall have been in connection with wireless telegraphy in the air ; thorough knowledge of wireless telegraphy, of wireless instruments and equipment, and of the method of installing and operating such equipment in aircraft ; supervisory ability ; good physical condition

Duties :

Under direction, to have charge of and be responsible for the inspection of wireless equipment and work which may be undertaken in connection with flying operations ; to advise as to the proper equipment for various kinds of air work ; to be responsible for the installation and operation of wireless equipment and direct its proper upkeep and repair ; and to perform other related work as required .

### **Air Navigator**

Initial Salary \$2,460 per annum.

M. An Air Navigator for the Air Board at an initial salary of \$2,460 per annum which will be increased on recommendation for efficient service at the rate of \$180 per annum until a maximum of \$2,940 has been reached . This initial salary is supplemented if the holder is the head of a household (irrespective of age) \$180 per annum .

Note : If board, lodging, or ordinary clothing is supplied, the value thereof shall be deducted from the above compensation.

Qualifications :

Education equivalent to high school graduation ; one year of experience in flying and navigating various types of flying machines ; commercial air pilot must hold or obtain it before April 1, 1914 and an air navigator's certificate ; thorough knowledge of the principles and practice of

## Notes on "Civil Aviation"

air navigation ; knowledge of flying machines, engines, and equipment ;  
ability to understand and efficiently to follow directions ;  
alertness and good physical condition .

### Duties

Under direction, to fly and navigate flying machines ;  
to take aerial photographs and perform general aerial  
observation work ; to operate wireless telegraph and telephone apparatus ; on occasion to supervise the work of employees at  
and the operations of a sub station ; and to perform other related work as required.

## AIRSHIP PILOT

Initial Salary \$2,820 per annum .  
Salary of \$23  
initial

\$2,820 per annum

air

Pilot

annum

with the Air

which will be increased

. At initial

annual salary

recommendation for efficient service at the rate of \$180 per annum until a maximum of \$2,820 has been reached. This initial  
salary is supplemented during the present fiscal year by the following bonus : If head of a household (irrespective of age)  
\$156 per annum .

Note : If board, lodging, or ordinary clothing is

expended the value thereof shall be deducted from the above compensation

### Qualifications :

Education equivalent to high school graduation ; one year of experience in flying and navigating various types of airplanes ; must  
hold or obtain commercial air pilot's and air navigator's certificates ; thorough knowledge  
of the principles and practice of air navigation ; knowledge of lighter-than-air machines and equipment ; ability to understand  
and follow instructions ; alertness and good physical condition .

### Duties:

Under direction, to have charge of and navigate airships ; to supervise the work of pilots and crews ; to supervise the  
maintenance and repair of airships and see that they are properly housed ; and to perform other related work as required .

## AIR PILOT,

Initial Salary \$1,980 per annum.

\$39. An Air Pilot for the Air Board at an initial

salary of \$1,920 per annum which will be increased on  
recommendation for efficient service at the rate of \$180

per

year. This initial salary will be supplemented during the

present fiscal year by the following bonus : If head

of a household (irrespective of age) \$252 per annum .

Expended the amount

Note

: If board, lodging, or ordinary clothing is

expended the above compensation .

### Qualifications :

Education equivalent to high school graduation ; one  
year of experience in flying various types of aircraft

## Notes on "Civil Aviation"

machines ; must hold or obtain a commercial pilot's flying machine certificate ; knowledge of aeroplanes, engines, and equipment ; ability to operate aero wireless apparatus, to take aerial photographs and to understand and follow instructions ; alertness and good physical condition

Duties :

As directed to fly flying machines ; to take aerial photographs and to operate wireless apparatus ; to perform general aerial observation work ; and to perform other related work as required .

### **AIR FOREMAN MECHANIC**

Initial Salary \$1,600 per annum.  
\$40.

An Air Foreman Mechanic for the Air Board at an initial salary of \$1,600 per annum which will be increased on recommendation for efficient service at the rate of \$80 per annum until a maximum of \$1,840 has been reached .

This initial salary is supplemented during the present fiscal year by the following bonus :

If head of a household (irrespective of age), \$348 per annum ; if not the head of a household, \$102 per annum, if over 21 years of age ; no bonus if below 21,  
but not the value thereof or deduction of clothing above compensation. from that

Qualifications ;

Primary school education ;

at least two years' of experience in the maintenance and repair of air craft and engines, preferably with at least two years of experience with internal combustion engines or as mechanic ;

must hold or obtain a certificate as an air engineer ;

thorough knowledge of the construction and design of aero engines ;

ability to supervise a staff of mechanics ;

good physical condition .

Duties :

To have charge, under direction, of the mechanical work and staff of an air station or sub-station ; to be responsible for the care, maintenance, and repair of the aircraft and engines at an air station ; to take charge of damaged machinery and be responsible for their replacement and the collection and care of their parts ; and to perform other related work as required

### **AIR PHOTOGRAPHER,**

Initial salary \$1,600 per annum.

Initial salary Air of \$1,600 per annum

to be increased on recommendation for efficient service at the rate of \$60 per annum until a maximum of \$1,740 has been reached. This initial salary is supplemented during the present fiscal year by the following bonus : If head of a household (irrespective of age), \$348 per annum ; if not the head of a household, \$102 per annum, if over 21 years of age ; no bonus if below 21, but not the value thereof or deduction of clothing above compensation.

Qualifications ;

Primary school education ; two years of experience in photography, preferably with aerial photographic apparatus ;

wide knowledge of standard types of aerial cameras ;

ability to take oblique and vertical photographs ;

ability to understand and follow instructions ; good physical condition.

Duties :

Under direction, to operate photographic apparatus in the air ;

to develop and print photographs so taken ;

to repair and maintain cameras in proper working order ; and

to perform other related work as required,

### **AIR WIRELESS OPERATOR.**

Initial Salary \$1,600 per Annum. at \$1,600 initial salary of \$1,600 per annum the Air Board

## Notes on "Civil Aviation"

increased on recommendation for efficient service at the rate of \$80 per annum until a maximum of \$1,740 has been reached. This initial salary is supplemented during the present fiscal year by the following bonus : If head of household ( irrespective of age ) \$848 per annum ; if not the head of a household,

,  
annum, if over 81 years of age ; \$102 per annum no bonus if below 21 . :

If board, lodging, or ordinary clothing is supplied the value thereof shall be deducted from the above compensation

Qualifications :

Primary school education ; a qualified wireless operator with wide experience with standard aerial wireless sets and a thorough knowledge of their design and construction ; ability to receive and send messages reliably at a rate of not less than 15 words per minute ;

Aeronautical Intelligence Officer

860. **An Aeronautical Intelligence Officer for the Air Board, at an initial salary of \$2,400 per annum, which will be increased on recommendation for efficient service at the rate of \$120 per annum until a maximum of \$2,880 has been reached. This initial salary is supplemented by whatever bonus may be provided by law.**

**Note.**—If board, lodging, or ordinary clothing is supplied the value thereof shall be deducted from the above compensation.

**Qualifications.**—Education equivalent to graduation from a university of recognized standing; at least two years of experience in the collection and distribution of publicity material or experience of equivalent character and standard, and a high degree of specialized knowledge of aeronautical subjects; administrative ability; tact and good judgment.

**Duties.**—Under direction, to gather and distribute information relative to aviation, aeronautical science, aeroplane production, and all related subjects; to supervise the preparation and editing of the Aeronautical Year Book; to assist the Secretary, Air Board, in the administration of the office, as assigned, and to act for him in his absence, and to perform other related work as required. Candidates for this position will be examined in the following subjects, which have the relative weights indicated; Education, Training and Experience, 300; Oral Interview, if necessary in the opinion of the Commission, 100.

Selections for eligible lists of applicants qualified to fill similar vacancies which may occur in future may be made from the applications for these positions.

According to law preference is given to persons

who have been on active service overseas on the military or naval forces of His Majesty, or any of the Allies of His Majesty, during the late war. The age limit does not apply to persons who have seen active service overseas, but returned soldiers must furnish a certified copy of their discharge certificates, or in the case of commissioned officers, a certified statement of their military service.

Application forms properly filled in must be filed in the office of the Civil Service Commission not later



than March 4. Application forms may be obtained from the office of the Employment Service of Canada, or from the Secretary of the Civil Service Commission, Ottawa. By order of the Commission.

W. Foran,  
Secretary. <sup>142</sup>

The Civil Service Commission of Canada hereby give public notice that applications will be received from persons qualified to fill the following positions in the Civil Service of Canada:

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Air Certificate Examiners

Two Air Certificate Examiners for the Air Board at an initial salary of \$2,940 per annum, which will be increased upon recommendation for efficient service at the rate of \$180 per annum until a maximum of \$3,300 has been reached. This initial salary will be supplemented by whatever bonus may be provided by law.

Note: If board, lodging, or ordinary clothing is supplied, the value thereof shall be deducted from the above compensation.

Duties.—Under the direction of the Superintendent of Certificate Branch, Air Board, to examine, approve, and recommend the issue of licenses to air pilots, navigators, and engineers; to examine, approve, and recommend the issue of certificates of airworthiness of flying machines; to examine, approve, and recommend the issue of licenses to aerodromes; to assist in the selection of, and make recommendations in connection with air routes; to conduct examinations in the theory and practice of air pilotage and air navigation; and to perform other related work as required.

Qualifications.—Education equivalent to graduation from a university of recognized standing; two years of experience in flying various types of flying machines; commercial air pilot's and air navigator's certificates; extensive knowledge of the theory of flight and the piloting and design of flying machines and of the construction rigging, and overhauling of all types of flying machines and of the construction and maintenance of aerodromes; ability to conduct examinations in the theory and practice of air pilotage and air navigation and to make through inspections and investigations into the proper construction and rigging of aeroplanes and engines; and to supervise such work.

Examination.—Subjects and Weights as follows:

Education, Training and Experience, 4; Oral Interview, if necessary in the opinion of the Commission, 1.

(Sgn.) W. FORAN, Secretary. EIC - 1920

## Notes on "Civil Aviation"

HIGGINS—FRANK CHIPMAN, of Ottawa, Ont. Born at Parliakimiedie, Banjam Dist., India, Dec. 30th, 1892; Educ. B.Sc, Acadia Univ., 1914, and spec. work in Ballistics and Aeronautical Eng'g; 4 years experience in experimental, mechanical and ballistical engr'g; Jan. 1916-Apr. 1917, with Experimental Gunnery Branch, Royal School of Gunnery, Shoeburgness, England, invented and revised various types of ballistic charts and tables for field gunnery; Apr. -Dec. 1917, i/c of armament experimental tests in the field; Dec 1917-Nov. 1918, on Board of Inventions and Research, London, representing armament design, section of Air Ministry; Nov. 1918-Sept. 1919, head of technical section. Can. Air Force; Sept. 1919 to date, Technical Intelligence officer, Can. Air Board (Member of Radio Sub-Committee of Assoc. Air Research Committee).  
References: H. C. Craig, J. A. Wilson, R. J. Durley, C. P. Edwards, D. W. McLachlan, S. G. Tackaberry.

### Associate Members

J. G. R. Alison, (Grad. S.P.S.) of Niagara Falls, Ont., Bridge inspector, Hydro-Elec. Power Comm., Niagara Falls; A. M. Bremner, of Prince Rupert, B.C., chief draftsman, office of div. engr., G.T.P. Ry., Prince Rupert; M. T. Cantell, (Tech. Coll. Brighton, Eng.) of Winnipeg, Man., consulting engr., Munic. of Fort Garry; J. H. Clark, of Truro, N.S., senior transitman, Halifax div., C.N.R.; C. L. Foss, of Enniskillen, N.B., res. engr., St. J. & Que. Rly.; J. T. Fullerton, B.Sc, (C.E.) (McGill '14), with Fullerton & Bell-Irving, civil engrs., Vancouver, B.C.; R. H. Goodchild, B.A.Sc, (McGill Univ.) of Calgary, Alta., with Dom. Govt, making irrigation, inspection and surveys in Sask. and Alta.; F. C. Higgins, B.Sc (Acadia Univ. '14) of Ottawa, Ont., technical intelligence officer, Can. Air Board; J. A. Jette, B.A.Sc. (C.E., Laval Univ.) of Montreal, Asst. engr., City of Montreal, Water Works dept.; R. A. Kirkpatrick, (McGill Univ.) of Nelson, B.C., senior asst. engr., D. P. W., Kootenay Dist., B.C.; H. M. Lyster, B.Sc. (McGill Univ. '13), salesman and estimating, bldg. materials, H. H. Robertson Co. Ltd., Montreal, Que.; C. A. Macvey, (Univ. of N.B.) of Fredericton, N.B., first asst. engr., Prov. of N.B., D. P. W.; E. B. Martin, B.Sc (Univ. of N.B. '12) of Moncton, N.B., comm'r. of streets and sewers dept., City of Moncton; R. McManus, B.Sc. (Mass. Inst. of Tech.) of Moncton, N.B., private practice; A. G. Scott, B.Sc. (McGill Univ. '14) of Montreal, Que., structural draftsman, Lockwood, Greene & Co. of Canada, Ltd.; R. L. Waycott, of New Glasgow, N.S., field engr., N.S. Steel & Coal Co.; Jas. Whitelaw, (Heriot Watt Tech. Coll.) of Moncton, N.B., asst. engr. in chief engr's office, C.N.R.; K. O. Whyte, of Montreal, Que., draftsman, Dominion Bridge Co., Montreal.

### Associate Member.

C. R. McCort, B.A.Sc, (C.E.) (Univ. of Toronto,) of Grand' Mere, Que., supt. i/c of constrn., Laurentide Co. Grand Mere, Que.

### International Aircraft Standards Commission

The Secretary reported that a Convention regarding this Commission is to be held in Paris in November, and, with the approval of the Air Board, a request has been

## Notes on "Civil Aviation"

addressed to Air Commodore R. K. Bagnall-Wild, Director of Inspection, Air Ministry, who will be one of the British Delegates, to represent the interests of the Canadian Government and of the Canadian members of the various Advisory Committees of the Commission. It is understood that at this meeting the United States will be for the first time be among the countries represented, and that the future status and activities of the Commission, together with its relation to any technical commissions or bodies operating under the Air Convention, will be thoroughly worked out.

### Representation of Air Board on Main Committee

The Secretary reported to the Main Committee the correspondence with the Air Board regarding its nomination of an ex-officio member on the Main Committee, a letter dated November 3rd, 1920, having been received requesting the appointment of Lt.-Col. E. W. Stedman, Director of Technical Staff, Air Board. Col. Stedman's nomination was welcomed, and his appointment as ex-officio member of the Main Committee was unanimously approved, such appointment to continue during the pleasure of the Air Board.

## Vancouver Branch

J. N. Anderson, A.M.E.I.C., Secretary- Treasurer.

The Vancouver Branch held a dinner on Saturday, 16th October, in the University Club, Lt.-Col. R. Leckie, D.S.O., Head of the Operations Branch, Dominion Air Board, being the guest of honour.

Earlier in the day the First Annual General Meeting of the Association of Professional Engineers of the Province of British Columbia was held, and this social meeting proved a very delightful ending to an outstanding day among Engineering events in this City.

Professor E. G. Matheson, Chairman of the Vancouver Branch, presided.

Those present were Lt.-Col. R. Leckie, D.S.O.; the following Victoria members, Messrs. A. E. Foreman, D. O. Lewis, J.B.Holcroft, H.M.Bigwood, Smith and Icke; the following Vancouver members and engineer friends:

Major R. W. Brock (Dean of the Faculty of Applied Science, University of B.C.), Major W. G. Swan, D.S.O., Major G. A. Walkem, Major C. R. Crysdale, Messrs.

Wm. Anderson, S. Anderson, J. N. Anderson, Bates, Blackman, P. P. Brown, Connell, Creer, Dalzell, Devey, Dunbar, Frew, Frith, Irwin, Jamieson, Lighthall, Muirhead,

McMurray, Philip, Powell, H. L. Robertson, Scott, Smith, Smeltzer, Smaill, Stirratt, Swift, Snodgrass and Todd.

The only toast was that of the King.

In introducing Lt.-Col. Leckie, the Chairman congratulated the guest of honour on his epoch-making flight from Halifax to Winnipeg, a distance of over 2000 miles,

and reminded those present of the Colonel's splendid record as an airman during the War, he having been the first to attack successfully and bring down a Zeppelin from a sea-plane.

Lt.-Col. Leckie, in opening his remarks, said he wished to speak, not as a soldier but as a citizen, and that he would confine his talk to Civil Aviation.

Then followed a most interesting description of the Halifax-Winnipeg flight, during which the audience learned of the frequent dangers and occasional humours of the undertaking, and the constant need of grim endurance.

Col. Leckie had for his companion Major Hobbs of Vancouver, to whom he paid a high tribute. The flight was made by sea-plane on account of the large areas of water in the Eastern part of Canada, it being stated that two-thirds of the world's fresh water was in Canada, largely east of Manitoba.

The organization of the Dominion Air Forces, Military and Civil, was explained, and the speaker proceeded to discuss Civil flying, pointing out that stunting, whilst of great military significance, was entirely uncalled for in civil or commercial aviation. Statistics of British and Canadian Commercial flying were quoted, showing the great strides which aviation has made, and also the safety with which large numbers of passengers have been carried, the fatalities being as low as .01 per 1000 in Britain in the course of 230,000 miles flown.

Col. Leckie has given much attention to the economic side of his profession, and his studies have led him to these findings.

The depreciation due to 'wear and tear' in highpower war type aircraft limited the life of the machine to approximately 600 flying hours, while a good pilot averaged a crash every 700 flying hours.

From this it was deduced that a war type machine put in the field for a period of six months and flown 300 hours was depreciated approximately 65 per cent, so that before flying can become a profitable business project the lifetime of a plane must be very considerably increased. Extensive alterations are therefore required in the design and construction of machines.

Before and during the War, aircraft were built of glued wood, piano wires and fabric. This was undoubtedly good business during the War, when the average life of a plane in France was 100 flying hours; but with peace conditions the speaker was of the opinion that the design and construction of aircraft was the work of the engineer, he being the most fully equipped by training to produce the necessary all-metal plane which would fulfil the conditions imposed on aircraft.

Under the terms required by the Allies, Germany was called upon to deliver to the Allies or to destroy all aircraft; but this condition has not prevented the Germans, largely engineers and chemists, from producing, since the War, many valuable adjuncts to the aeroplane, and it is known that Germany has now a large number of newly

## Notes on "Civil Aviation"

constructed, so-called commercial aircraft, and further has successfully built all-metal aeroplanes.

The speaker stated that he was not one of those optimists who imagined the last war has been fought, and that he was fully of the opinion that the next one would be under such conditions that aircraft would be the essential arm of warfare. When it was understood that a commercial craft can be turned into the most complete military machine in about an hour it behooved Canada, if she would hold her place in the World's affairs, to consider this fact. The cost of such a vessel as H.M.S.

"Hood" would cover 800 bombing planes, a statement which, when considered, must give food for thought and at once show the full import of the civil or commercial flying machine. Unfortunately, as yet, no aircraft factories have been established in Canada, but Col. Leckie looked to the time, at no distant date, when this would be remedied and hoped that the engineer would play the most prominent part in putting Canada in the forefront of aircraft manufacturers.

A vote of thanks to Lt.-Col. Leckie was moved by Major Swan, seconded by Mr. Lewis and responded to with musical honours.

### Victoria Branch

H. M. Bigwood, A.M.E.I.C., Secretary-Treasurer.

The Branch opened its season on Thursday October 21st. with a meeting to which the public were invited,

when Colonel R. L. Leckie, D.S.O., Director of Civil Aviation, had kindly consented to speak on his experiences during the flight across Canada and on Aviation generally. Unfortunately the distinguished aviator was recalled to Vancouver on Air Board business, almost immediately after his arrival in Victoria, and so was unable to attend,

but he had prevailed upon Major Hobbs, who had been his companion during the first stage of the flight, from

St. Johns to Winnipeg, to take his place and address the meeting in his stead. Major Hobbs opened his remarks by outlining the organization of the Air Board at Ottawa, and gave a short synopsis of the work of the three branches, Military, Civil and Operations. Speaking of the flight across Canada, the speaker stated that they had hoped to get through sooner, but that bad weather had held them up time after time.

The actual flying time was 48 hrs. 20 minutes for the journey of about 3300 miles, from the Atlantic to the Pacific. Ill-fortune overtook them soon after leaving St. John's

when they ran into a gale blowing fifty miles an hour. Fog and engine trouble delayed them at various times between Ottawa and Winnipeg.

The portion of the flight from Winnipeg to the Coast was not dealt with by the Major, who had not taken part in it, and the reports of which were not at the time complete, but it had been completed satisfactorily and without difficulty.

The use of wireless to give an aviator his location was described, and the work of the R.N.A.S. during the war was touched upon, patrols upon the "cobweb system"

## Notes on "Civil Aviation"

being described.

In speaking of the construction of aeroplanes the Major said that it was necessary to get away from the flimsy construction of the essentially war-time machine and standardize a type which would deteriorate less rapidly.

Figures were given to show that aerial travel was not the dangerous experience people generally supposed, in England where a year's figures were available the proportion of passengers killed to the number carried was one per thousand. At present Canadian casualties were three times this number, but this condition would soon be remedied.

The vote of thanks to the speaker was proposed by Mr. Yarrow and seconded by D. O. Lewis, M.E.I.C., the mover recalling the pioneer journeys across the continent in earlier days by wagon and railway; he reminded his audience that this flight just completed was also a pioneer adventure.

Depreciation. Aircraft Depreciation. The Air Board of Canada, Bui. no. 1, May 1920, 6 pp. Also Flight, vol. 12, no. 40, Sept. 30, 1920, pp. 1039-1040 and Aeronautics, vol. 19, no. 363, Sept. 30, 1920, pp. 246-247. It is calculated that total allowance in computing cost of operations or insurance and depreciation upon new machines valued at \$10,000 and used for a period of six months during which it was flown 300 hr. should be \$6786, or 674/s per cent of value of machines.

Communications have been addressed to the Air Board (Canada) with the view of obtaining for the Sectional Committee on Aircraft Parts proper governmental recognition as the Canadian section of the International Aircraft Standards Commission. If this approval is given, the C.E.S.A. Committee will have the same recognition from the Canadian Government as the British Government has given to the corresponding Committee of the B.E.S.A.

January 29th, 1920 Annual and Professional Meeting- THE ENGINEERING INSTITUTE OF CANADA, Montreal

January 27th, 28th and 29th, 1920 : "AVIATION" "The Policy of the Air Board of Canada," by Lieutenant-Colonel O. M. Biggar, B.A., K.C., Vice-Chairman of the Air Board of Canada.

### Afternoon Session, Thursday, January 29th.

Vice President Mitchell, who occupied the chair, called the meeting to order and asked Lieut.-Col. O. M. Biggar, Vice Chairman of the Air Board of Canada to address the meeting on the subject of aviation "The Policy of the Air Board of Canada". Col. Biggar's address is published in full in this issue of The Journal. Frederick B. Brown opened the discussion stating that there were two gentlemen present who had made a special study of the subject and who were in a position to do so from the viewpoint of expert knowledge. He suggested that we hear from Gen. Mitchell, who had been studying the matter for twenty odd years and from Prof.

McKergow, one of whose subjects at McGill University was aeronautics.

Brig.-Gen. Mitchell traced briefly the development of aerial navigation from the time of the Chicago Exhibition when he had begun to study it at which time we knew nothing about the problem of aero-dynamics or about the scientific principles underline the aeroplane as

we now have it. The stabilizing of the aeroplane had been developed in the early days of the war a very important feature of the aeroplane service was due to the fact that it was possible to keep in constant communication with headquarters. Such was the development of the aeroplane and so important was the science becoming that it would soon be necessary to consider a new section of The Institute's activities in which the automotive engineer would find a place. The Institute should also consider to what extent it would take part in this new development.

Major C. M. McK<sup>rgow</sup>, Professor Mechanical Engineering, McGill University, congratulated Col. Biggar on the excellency of his address and stated that he was interested in the aeroplane rather than in aerial navigation. His work had been concerned with making the aeroplane more efficient, the engine and the materials which go to make the plane itself. As an engineer he considered there were two functions of the aeroplane which were most important, namely, for forest protection and surveying. This was now being done in Quebec with remarkable success. For exploration work, plotting out new territory and forest ranging the difficulties incidental to the use of the aeroplane for these purposes had been overcome. It is possible that the Federal Government may adopt these methods. He trusted that the Air Board would in their study of their problems realize that the aeroplane must be more perfect in the engine and in the parts, that an impetus should be given to research in metallurgy to develop stronger materials, to improving carburetion and ignition, or possibly eliminating them entirely in an engine, whereby the engine will be one hundred per cent efficient as regards economy and shall give one hundred percent of service, using materials that will not corrode. He believed it was within the limits of metallurgical research to develop materials of strength exceeding those we have at present and if sufficient opportunity were given to the skilled, engineer who was fond of that type of work that an engine might be developed which would eliminate the carburettor and the sparking device, which he understood gave about sixty-eight percent of all troubles in the air. It spoke well of the mechanical part of the construction that the materials, bearings, etc. gave very little trouble. He felt that this wonderful romantic thing capable of flying through the air was worthy of every engineer's earnest consideration.

Col. Biggar replied that during the past three months the Air Board had been in communication with the Research Council of Canada on the subject of aeronautical research and that arrangements had been completed for the appointment of an Air Research Council in connection with the Research Council of Canada which body was holding its organization meeting next week. The Air Board would welcome suggestions with regard to directions in which research might usefully be undertaken.

The reading of his paper "The Pulp and Paper

Industry" by Ferd. van Bruyssel, followed by the "Forests of Quebec" by G. C. Piche, A.M.E.I.C, Chief of Forests Service, Quebec Lands and Forests Department, concluded the afternoon session. - The Journal of The Engineering Institute of Canada April 1917 Volume III, No. 4

## THE POLICY OF THE AIR BOARD IN CANADA

Colonel O. M. Biggar, B.A. K.C., Vice-Chairman of the Air Board of Canada

### Development of Aviation

The development of air transportation proceeded extraordinarily slowly for a good many centuries and has proceeded with extraordinary rapidity during the last century or thereabouts. The development of the internal combustion engine, has really made possible the development of air navigation during a comparatively short time. In 1914 we turned our whole attention, so far as air navigation was concerned, to the development not of a machine for developing the civil social life of the world but a machine of destruction, and these last five years have given an extraordinary impetus, and at the same time an extraordinary change in direction to the development of air navigation.

### Effect of the War

During these five years war urgency really had two favourable effects. In the first place the money available for air navigation became practically unlimited. Whatever it seemed well to do the money was available to carry out. No considerations of finance intervened to prevent the undertaking of any experiment which promised useful results, and no money lacked for the actual construction of machines which looked as though they had a military value. The situation also had this result, that so far as advertising went the public became completely familiar with the possibility of transport by air.

It probably became more familiar in those five years with that possibility than it would have done in a quarter of a century of peace. Those two results of the intervention of the war at the time that it did intervene in the development of air navigation had probably a greater effect in the two directions of supplying money and of advertisement than could have been obtained in five times five years of peace. But the war also had another result which was not quite so favourable, although this by no means balanced the advantages to which I have referred.

It had this effect, that *the Government* having been *during the war the only employer of air personnel*, the only purchaser of aircraft, *the public at large after the war was left under the impression that the whole matter of air navigation was a subject for action by the Government and the Government alone.*

The expenses have now, however, in peace time become a matter of very much more considerable importance and the probability is — I might almost say the certainty is, — that hereafter we shall find that it is much more profitable from the point of view of society generally that the Government's relation to the development of air navigation should be rather that of generating a little current only to serve to throw the proper switches of the local generating stations, which must be supplied with power by individuals and by groups of individuals acting independently altogether of the Government activities.

There is another thing that also has had its bearing upon *air navigation during the war* and that is this: air navigation being a matter of purely military importance, there grew up in every belligerent country a tremendous military interest in air navigation, and curiously enough, having regard to the extent to which aviation has developed before the war, *there was after the war in existence in every country a military air organization but no civil air organization.*

If you just think a moment you will remember that the Air Ministry in England came into existence only through the war and, at the time of its inception, only for the purposes of the war.

*In France the whole matter of aviation was under the direction of the War Department.*

*In the United States even to day the whole interest in aviation, the only interest in aviation, is centered in the Departments of War and the Navy. There is not any civil air organization.*

*In England, on the other hand, there came into existence after the war a civil air organization, but it came into existence as a sort of an excrescence on the Military Air Ministry.*



## Notes on "Civil Aviation"

*In France I think the situation is still that the air administration is under the War Department.*

Generally speaking, *the situation common to all the belligerent countries was that the military organization which came into existence for the purpose of the war continued to deal with aviation after the war either directly or through some small auxiliary organization.*

### Civil Aviation after the War

*Canada was in a completely different position from any other belligerent in that respect.*

*Canada came out of the war without any air organization in Canada at all.*

*The only air organization that there was, that was "Canadian" in character, consisted of two squadrons which formed part of the Canadian Expeditionary Force.*

Those squadrons were in England; they were administered by the Department of Overseas Military Forces of Canada, and they had no counterpart as far as organization went in Canada.

I am speaking about that because there was a widespread misunderstanding to the effect that those squadrons were not Canadian organizations at all, but were two squadrons of the Royal Air Force that were formed from Canadian personnel.

That is not the case.

The fact was that those two squadrons were exclusively Canadian in character, were organized by the Canadian Overseas Department, paid for by Canada and had an exclusively Canadian character.

*Then in May last year it was proposed to bring those squadrons back to Canada to form the nucleus of an air organization here.*

*The Government decided against that, and the result was that those squadrons were demobilized in England just as the rest of the Canadian Expeditionary Force was demobilized.*

*None of the squadrons came back as "formed" organizations.*

Instead of bringing them back the Government decided to create a new civil organisation to set up a completely new body which would deal with all air matters.

### Formation of the Air Board in Canada

The result was the formation of the Air Board, which in effect constitutes a new department of Government, at the head of which is one of the Ministers of the Crown. The personnel of the Air Board was selected from among men who were already in the public service in various departments for the purpose of getting something done, of getting an air administration which could carry on and do the preliminary work of organization.

*It is probable that the re-organization of the Air Board (air Force) on a permanent footing will take place before very long.*

The work that has been done is of an important character and it is of three different kinds. Different from every other air organization, the air organization thus formed was given control of the air in all its aspects.

There is no other department of the Government that is interested in anything above the earth; the whole atmosphere comes under the direction, so far as it can be directed, of the Air Board.

The Board:

1. has exclusive jurisdiction to form a military air force;
2. has exclusive jurisdiction over the administration and regulation of civil flying of all kinds;
3. has exclusive jurisdiction to operate such air services as are necessary to be operated for any government purposes, and in this respect has to some extent the character of a taxicab company.

### Work of the Air Board

Now, something has been done by the Air Board along each of these three lines.

In the first place, it has put forward a scheme for the organization of a military air force. This scheme is still under consideration. It is not known yet whether it will be found possible to adopt it.

The question of finance, of course, enters very largely into any decision that is now arrived at, and these questions and other connected questions are under consideration by the Government.

It will depend on the decision that will be arrived at on these questions what form the military air organization will ultimately take. In the second place plans have been made for quite wide spread flying operations. For these it is proposed to use British machines no longer needed for war.

## Notes on "Civil Aviation"

The British Air Ministry on the demobilization of the British Air Forces has treated Canada with extraordinary generosity, and arrangements have been made to send to Canada one hundred heavier than air flying machines as a straight gift. In addition there are sixteen or eighteen flying machines which were presented to the Canadian forces from time to time during the war and are being replaced by the Air Ministry, so that there are about one hundred and twenty heavier than air machines that are coming from England. In addition the Air Ministry is presenting to us some eighteen airships (lighter than air craft), of different types, and a considerable amount of specialized motor transport, the whole running into very large figures, probably some five or six millions dollars. So that *we shall be extraordinarily well equipped* in the circumstances, *not only to train military airmen when authority is given for that purpose* but also to carry on our taxicab service for other departments of the Government as soon as the plans for this have been sufficiently developed.

### The Work Ahead

I think perhaps I might diverge for a moment here to tell you some results that we have arrived at in connection with the cost of those operations, and which may be interesting to you as engineers. We have made very careful calculations of the probable expense of flying and the results that we have arrived at are somewhat remarkable.

### The aircraft

I am speaking particularly of the heavier than air craft, because it is those to which we have been directing our attention = the aircraft of to day is a machine with a somewhat uncertain engine in it, not as certain at all events as we would like to have it, and is built up of wood and wire and cloth, with the result that the chance of breakdown and depreciation is very high.

The best figures that we have been able to arrive at indicate that, out of the total expense of a given series of air operations, somewhat *between sixty and eighty per cent is to be put down to depreciation and insurance against accident.*

An enormous proportion, as you will agree. It is true that the experience we have to guide us is almost exclusively a war experience, but every allowance has been made for that, and, making those allowances, we have come to the conclusion that the probable rate of depreciation for obsolescence alone is three per cent per month, and that so far as flying is concerned the rate of insurance against accident for which we must allow is pretty nearly one-quarter, perhaps one-fifth, but probably nearer one-quarter per cent for every hour of flying; so if you take a ten thousand dollar machine, you have somewhat about twenty to twenty five dollars an hour to set aside to meet the chance of that machine breaking down either wholly or partly.

Finally we have come to the conclusion that the allowance that must be made for actual deterioration due to flying, not from accident but from ordinary use, runs from one quarter down to one-sixth of one per cent for every hour of flying, so that you see it is not difficult to get up to between sixty and eighty per cent of the total expense of given operations to cover those extremely heavy charges.

*It follows very clearly that the development of flying at the moment depends almost wholly upon the engineer; at all events it depends to a proportion of sixty to eighty per cent on the engineer if the figures I have given are correct, and I have every reason to believe they are.*

We must develop an engine to show a factor of safety so high that we can reduce that enormous charge for insurance against accidents. We must also develop a machine which is not subject to that very high deterioration in flying. Those are both purely engineering problems, and upon their proper solution I think there is no doubt the future of flying almost wholly depends, I mean, flying for civil purposes.

There is just this further to be said in fairness.

All the machines that have been developed up to the present time have been machines that were to be exposed to war risks. Consequently a construction which resisted deterioration was not of the first importance and as war risks were to be undertaken by the personnel, the construction which gave a high factor of security against accidents was not of the first importance. Now those two things have become of the first importance, and the solution of the problems of the increase of safety, and the extended life of the craft are of very great moment indeed.

### Regulation of Civil Aviation

The third thing to which the Air Board has directed its attention, and at which it has been working for some time, is the performance of its third duty, that of regulating flying of all kinds, of regulating civil flying.

There was published recently in the Canada Gazette what are known as "Air Regulations, 1920," which are published in book form with the Air Board Act, with all the forms which it is proposed to use under the regulations, and with the provisions of

## Notes on "Civil Aviation"

the Convention relating the International Air Navigation, which were discussed and settled in Paris at the same time as, though not as part of the Peace Treaty.

The Commission which drafted the Convention was part of the Peace Conference Organisation, although the Convention itself was not a necessary part of the peace negotiations.

To give you an outline of the character of the provisions of the Regulations, arrangements are made for registering every aircraft that goes into the air except for the purpose of test or experiment.

Only aircraft registered, either in Canada, or in some country with which Canada has a convention, or in some other of His Majesty's Dominions have the right to fly over any part of Canada.

The Air Board has laid down certain fixed specifications for air harbours of all kinds and it is hoped air harbours will be established widely, and that they will be very numerous, because upon their number really depends the future of flying. The air harbours used for any commercial purposes are required to be registered, although those that are only used by private persons for their private aircraft do not require registration.

Then provision is made for the licensing of all the personnel that goes into the air, not only pilots of all kinds, pilots of flying machines and pilots of airships and balloons, but also navigators and engineers.

Then there are provisions for the enforcement of customs laws.

There are provisions with regard to the rules of the roads, both in the air and on the ground, and with regard to lights and signals, these *being taken from the International Convention, and being therefore likely to be the same throughout the world.*

There are also certain general provisions for returns and so on, but the result of the whole is that a complete record will be kept under the regulations of all the aircrafts and flying personnel in Canada.

*Speaking generally, the regulations follow the International Convention, which is tremendously useful although it has not yet been ratified by Canada.*

### Aerodromes

With regard to the aerodromes, two possible policies have been suggested.

One is the policy of dealing with air harbours in exactly the same way as harbours for watercraft; that is by the provision of these throughout Canada by the Government. The possibility of adopting that policy has been rejected.

There are comparatively few places situated on water that require the development of harbours. I mean proportionately to the total number of such places, and it is not altogether unreasonable for the Dominion Government to assume the duty with regard to water harbours.

To assume that duty, however, with regard to airharbours would create a situation that would be absolutely impossible. Every city, every town, possibly every village is a possible terminal or waystation for aircraft and if the Dominion Government was to undertake to provide each of these places with an airharbour, the result would be that the development would be very very slow, money would be lacking, and favouritism would have to be shown, or more probably nothing would be done either by the localities concerned or by the Government.

So that it has been definitely decided that municipalities will not be provided with airharbours, and that the intervention of the Government in the direction of providing airharbour will be confined to the provision of emergency landing grounds between municipalities on recognized air routes where the municipalities themselves have provided airharbours but are too far apart to make the route safe without the provision of emergency landing grounds.

I am quite ready to give as much publicity as possible to that decision, because I think that only if this is definitely understood can we look forward to that absolutely necessary development without which we shall not have any considerable amount of flying.

THE ENGINEERING INSTITUTE OF CANADA

176 Mansfield St., Montreal

BRANCHES:

Halifax Branch, Halifax, N.S.

St. John Branch, St. John, N.B.

## Notes on "Civil Aviation"

Quebec Branch, Quebec, Que.  
Montreal Branch, Montreal, Que.  
Ottawa Branch, Ottawa, Ont.  
Kingston Branch, Kingston, Ont.  
Peterborough Branch, Peterborough, Ont.  
Toronto Branch, Toronto, Ont.  
Hamilton Branch, Hamilton, Ont.  
Niagara Peninsula Branch, Niagara Falls, Ont.  
Border Cities Branch, Windsor, Ont.  
Sault Ste. Marie Branch, Sault Ste. Marie, Ont.  
Winnipeg Branch, Winnipeg, Man.  
Saskatchewan Branch, Regina, Sask.  
Edmonton Branch, Edmonton, Alta.  
Calgary Branch, Calgary, Alta.  
Vancouver Branch, Vancouver, B.C.  
Victoria Branch, Victoria, B.C.

Applicants for positions under the Air Board, advertised in July, 1919, who wish to be reconsidered in connection with the positions now advertised must advise the Commission to this effect.

The positions advertised herewith are grouped in the following classes:

- 
- (a) Flying.
  - (b) Technical.
  - (c) Mechanical.
  - (d) Other appointments.

Applicants for more than one class of positions must file a separate application for each class for which they are making application. Application forms must be filed in the office of the Civil Service Commission not later than February 19. Such forms may be obtained from the Secretary of the Civil Service Commission, Ottawa, the Secretary of the Air Board, Ottawa, or the offices of the Employment Service of Canada.

By order of the Commission,  
W. Foran,  
Secretary.

At the beginning of 1920 the Canadian Air Board and Board of Management of the Canadian Air Force Association was constituted as follows (srs ref : THE CANADIAN ANNUAL REVIEW 1920) :

Chairman, Rt. Hon. A. L. Sifton ;  
Vice-Chairman, Lieut.-Col. O. M. Biggar, K.C. ;  
Director of Flying Operations, Lieut.-Col. Robert Leckie, D.S.O. ;  
Deputy Director of Flying Operations, Major Lindsay Gordon ;  
Superintendent of Certificates and Licenses, Lieut.-Col. J. Stanley Scott, M.C., A.F.C. ;  
Superintendent of Seaplanes, Major Basil D. Hobbs, D.S.O., D.S.C. ; Superintendent of Aeroplanes, Capt. Devlin ;  
Director of Technical Intelligence, Capt. F. C. Higgins ;  
Canadian Liaison Officer to British Air Ministry, Major D. R. McLaren, D.S.O., M.C., D.S.C.

Following the death of Mr. Sifton, Hon. Hugh Guthrie, K.C., M.P., became Chairman of the Board and the responsible head of its administration ;

Air Vice-Marshal Sir Willoughby Gwatkin, K.C.M.G., C.B., became Inspector-General of the Force ;  
Air Commodore A. K. Tylee, O.B.E., of Toronto, was appointed Officer Commanding the Force.  
Advisory members were

## Notes on "Civil Aviation"

Capt. Walter Hose, C.B.E., of the Royal Canadian Navy, and  
E. Deville, L.I.\*D., Surveyor-General, Department of the Interior.

The final organization of the Air Force was completed early in the year and the Chairman of the Board (Mr. Guthrie) explained its position on Mch. 16 as follows : "The Canadian Air Force is organized as a non-professional force, the personnel of which in all ranks, from the lowest to the highest, undergoes normally one month's training every two years.

Certain staff and administrative duties require for their performance a longer term, normally six to nine months, and to secure the services of competent officers and other instructional personnel for these duties, which involve absence from ordinary civil occupations for substantial lengths of time, special rates of pay are provided.

These special rates do not apply if the service of any individual is prolonged beyond one year, and the pay receivable is reduced accordingly.

The approximate weekly time-table for an air mechanic in training is as follows :  
Lectures on engines, theory of flight, rigging and construction of aeroplanes, 24 hours ;  
work in shops and on machines being flown, 20 hours ;  
other military duties, guards, drills, etc., 16 hours."

The authorized establishment was 5,000 of which 2,000 were to be officers and 3,000 other ranks; *the Force was organized as a Militia unit, its local administration was to be carried on by Provincial Executive Committees, and a training centre was to be formed in each Province.*

By this time the 100 heavier-than-air machines of different types presented by the Imperial Government, together with dirigibles and equipment, had been received at Ottawa ; amongst them were eight F3 flying boats equipped with Rolls-Royce (VIII) engines ; after repairs and adjustments to some of them they were grouped at the Camp Borden Aerodrome from which they were, later on, distributed as required for operations throughout the year ; there were, also, 12 airships and six kite balloons included in the Imperial gift. Meantime, the Canadian Air Force had received an appropriation of \$2,500,000 which was to be used in carrying out Government flying operations, civil and military, throughout the Dominion.

The maintenance of three stations was also approved at Camp Borden, Ont. ; Morley, Alta. (about 30 miles west of Calgary) ; and Jericho Beach, English Bay, Vancouver. *There was no difficulty in obtaining pilots* out of the estimated 10,000 in Canada who had seen War service, *but there was a shortage in officers, experienced in air-ship practice, and the British Air Ministry offered to loan officers for this work.*

As finally organized during the year, the Flying and Administrative Services were divided into three separate Departments :

1. The Canadian Air Force, *which was the military wing*. Military training *in flying* was undertaken at Camp Borden where each member of the Force was given training for *four weeks every two years* with, at the end of the year, about 35 officers and 65 other ranks continually under training and a dozen or more machines in constant use;
2. Civil **Government** Operations which has jurisdiction for :-
  1. the development of photographic survey of timber areas,
  2. exploration of inaccessible regions, and
  3. kindred "similar" work
3. Commercial Aviation which has jurisdiction over:
  1. all civil aviation ventures, and
  2. inspection of machines, the
  3. licensing of personnel, the
  4. survey of air routes between various points.

*In each Province there was by this time a Branch of the Canadian Air Force Association* chartered, with a permanent Secretary and three Civil members and four C.A.F. members.

*The Provincial Associations were responsible to Headquarters at Ottawa. The Headquarters at Ottawa was directly in charge of the Inspector-General and the Officer Commanding,* with J. A. Wilson as Permanent Secretary.

On Jan. 6, 1920, Regulations were issued from Ottawa to which all persons operating aircraft in Canada were compelled to conform. They provided for:-

## Notes on "Civil Aviation"

1. registration, by the Air Board, of all aircraft, and
2. the issuance of certificates to pilots without which certificate no person could fly in Canada.
3. Pilots certificates were obtainable only after applicants had satisfied the Board, by certain stipulated tests, that
  1. they were qualified to operate a machine, and
  2. had also passed a medical examination.
4. Pilots operating machines for commercial purposes require medical examinations to be passed every 6 months,
5. Private fliers require medical examinations to be passed every 12 months.
6. All registered aircraft are subject to the call of the State in time of war, and
7. During periods of war all :-
  1. Persons holding commercial pilot's certificates become members of the Canadian Air Force. What is also implemented, but not well stated is that :-
    1. Persons holding Air Engineer certificates also become members of the Canadian Air Force,
    2. Persons holding Air Mechanics certificates also become members of the Canadian Air Force
  2. air harbours are subject to the control of the military authorities,
8. machines must bear certain markings, clearly indicated in the regulations, and
9. aerodromes and seaplane stations must bear certain markings, clearly indicated in the regulations.
10. Passenger aircraft are NOT permitted to carry explosives, and
11. mails could not be carried without the written authority of the Postmaster General.
12. all aircraft flying across the international border Line are required to stop at one of the border stations for examination
13. Foreign aircraft could not conduct a business of transporting passengers or freight between points within the boundaries of Canada, but
14. Foreign aircraft can conduct a business of transporting passengers or freight between from a point in the United States to a point in Canada.

Speaking in Toronto on Jan. 9, Lieut.-Colonel O. M. Biggar told the Aero Club of Canada about the new Force and the Air Board.

1. Its foundation was due, he said, primarily to the generosity of the British Air Board in its gift of aeroplanes and equipment;
2. the Board proposed to work along various lines and amongst them to aid thinly-settled districts by doing surveying, policing,
3. fire-ranging, exploration work and, possibly, undertaking the mail service in specific districts ;
4. co-operation had been arranged with Sir Frederick Stupart for the Meteorological services, which were so vital to Aviation, in securing information necessary for flying, and
5. co-operation had been arranged with the Departments of Marine, Naval Service, and Research at Ottawa.

Lieut.-Col. Leckie pointed out why it was difficult to maintain a military air force of any size.

1. The average cost *per squadron* was about \$5,000,000;
2. the gift of aircraft to Canada was worth over \$7,000,000.
3. Aviation could not develop until the ground work had developed, except with seaplanes, for which reason the first work to be done would be the opening up of the Northern districts where there were plenty of lakes.
4. The aeroplane could not compete with the railway, but its great value would be where no railways existed.

Dr. A. B. Macallum, F.R.S., described how valuable *the Helium gas resources of Alberta and Western Canada, being the only sources of supply in the British Empire* would be in the development of air machines.

On Jan. 17 a *Canadian Air Service Association for the four Western Provinces* was organized at Calgary with

Capt. Fred. McCall, Calgary, as President,  
Capt. C. McEwan, Saskatoon, as Vice-President, and  
Lieut. T. H. Spence, Regina, as Secretary / Treasurer; the  
Capt. W. R. May, Alberta - Director  
Major A. M. Lester, British Columbia - Director  
Capt. G. R. Fleming, Saskatchewan - Director, and  
J. H. Ross, Manitoba - Director.

The objects of the Association were defined as follows:

1. to encourage mutual helpfulness, social intercourse, mental and moral improvement, amongst its members ;

## Notes on "Civil Aviation"

2. to cement the friendships and associations formed in France, Great Britain, Canada and elsewhere by its members during their service in the Great War;
3. to promote interest in aerial navigation,
4. to increase the knowledge of its members in aeronautics, to encourage aerial navigation, conferences, expositions and congresses;
5. to encourage the development of aircraft for commercial and pleasure purposes,
6. to promote the interest and welfare of the Provinces in respect of aerial navigation;
7. to establish, maintain and operate club houses for the use of the members,
8. to assist the Government in the operation of aeroplane garages and aerodromes;
9. to do all such lawful acts and things as may be found necessary or expedient in the encouragement and development of aeronautics.

During the year various voluntary organizations throughout Canada were working hard to develop public opinion and support. The Aero Club of Canada with headquarters at Toronto was active in propaganda work and endeavoured, especially, to impress various cities with the necessity of making adequate provision for an air harbour and, by the middle of the year, the following towns had applied to the Government for a representative to come and select a site :

1. Wetaskiwin, Alta. ;
2. Victoria,
3. Cranbrook and
4. Vancouver, B.C. ;
5. Winnipeg and
6. Virden, Man. ;
7. Truro, N.S.,
8. Goderich,
9. Brantford and
10. Perth, Ont. ;
11. Lloydminster,
12. Melville,
13. Regina and
14. Saskatoon, Sask.

Other Associations in Canada were as follows :

Aero Club of Canada Toronto  
Aeronautical Association of Montreal Montreal  
Air Service Association Kamsack  
Air Service Association Saskatoon  
Air Service Association Regina  
Air Service Association of B. C. Vancouver  
Air Service Association Prince Albert  
Aerial League of Canada Vancouver  
Aero League of Canada Victoria  
Aero League of Canada Montreal  
Aerp Club of Manitoba Winnipeg  
Aerial League of New Westminster New Westminster

Meanwhile, in February, regulations issued by the Air Board contained advice with regard to the establishment of aerodromes and seaplane stations and instructions as to markings which these must bear. During the next few months, under directions of the Air Board, aerodrome and landing sites were chartered across the country ; training proceeded steadily at Camp Borden where substantial, permanent buildings and 18 hangars, established as a flying base by the Imperial Government during the War at a cost of about 1,000,000, were handed over to the Canadian Air Force.

Rates of pay at Camp Borden and at other training stations which were established later on at Ottawa, Lake St. John in Quebec, Halifax, Morley in Alberta and Vancouver, were as follows (per day) :

1. Air Commodore, \$9.50;
2. group captain, \$7.50;
3. wing commander, \$6.00;
4. squadron leader, \$4.75 ;
5. flight lieutenant, \$4.00 ;

## Notes on "Civil Aviation"

6. flying officer, \$3.25 ;
7. pilot officer, \$3.00;
8. pilot officer on probation, \$2.50;
9. warrant officer, \$2.05;
10. flight sergeant, \$1.80;
11. sergeant, \$1.45;
12. corporal, \$1.25;
13. first air mechanic, \$1.15;
14. second air mechanic, \$1.00.

In August the road map of the sky for all Canada was issued by the Air Board and covered every route laid within the Dominion. In September final regulations were published based largely upon the R.A.F. model in England and, in October, it was announced that the work of the year had resulted in a chain of 27 public and commercial air harbours and 37 stations with landing facilities from Coast to Coast; 34 commercial aviation firms were said to be operating in Canada of which one of the most notable was that formed in Toronto by Lieut.-Col. W. G. Barker, v.c., D.S.O., M.C., and Lieut.-Col. W. A. Bishop, v.c., D.S.O.,

M.C. and large concerns such as Price Bros., the Laurentide, Sault Ste. Marie, and other Pulp interests were employing aircraft as helpful in their business ; in British Columbia efforts were under way to establish Air services along its 7,000 miles of coast line and to help in the Interior mining country with an Air mail service inaugurated between Victoria and Seattle on Oct. 15. Major McLaren of the Air Board, in submitting station recommendations for the Province, declared that aircraft should be especially suitable in British Columbia for fishery patrols, forest ranging, exploratory surveying, police and coastguard work.

An interesting event of the Autumn was the blazing of an Air trail across the Dominion and the continent by Lieut.-Col. Robert Leckie, Major Basil D. Hobbs and others. The two mentioned started in an ordinary type of flying boat from Halifax at 2 p.m. on Oct. 4 for a Trans-Canada flight. The objects were (1) to demonstrate the feasibility of such a flight from a commercial point of view; (2) to prove the possibilities of a fast trip from Halifax to Vancouver without undue strain on either pilots or machines; (3) to serve as a recruiting propaganda for the Canadian Air Force and to stimulate interest in aviation by commercial firms and the public generally. At Selkirk, Man., on Oct. 9 the seaplane was changed to an aeroplane and Capt. J. B. Home-Hay, M.C., and Air Commodore A. K. Tylee continued the Flight to Regina and Calgary ; thence to Vancouver Commodore Tylee was accompanied by Capt. C. W. Thompson and the destination reached at 11.19 a.m. on Oct. 17. The actual flying time for this 3,410 mile trip was 45 hours and 20 minutes ; the ordinary running time by rail was 132 hours and 10 minutes. Of course there were all kinds of delays and accidents and stoppages which only a complete ground organization, skilled experience, adequate wireless direction, finding stations and better commercial machines, with relays and air-harbours, could obviate. The flight, however, provided much useful information of climatic and geographic character. Gales of wind, broken machines, severe fogs, engine troubles of all kinds, were amongst the difficulties overcome.

1920 : F. Handley Page, the eminent British maker of aeroplanes visits Canada. and an interview with him in the Montreal Star of

07 February 1920 : CIVIL SERVICE COMMISSION OF CANADA - POSITIONS VACANT List No. 10 :

### **AERONAUTICAL INTELLIGENCE OFFICER**

Reference # 800. An Aero nautical Intelligence Officer <sup>143</sup> for the Air Board at an initial salary of \$2,400 per annum, which will be increased on recommendation for efficient service at the rate of \$120 per annum until It maximum at \$2880 has been reached.

This initial salary is supplemented by whatever bonus may be provided by law.

NOTE: If board, lodging, or ordinary clothing is supplied the value thereof shall be deducted from the above compensation .

#### Qualifications :

Education equivalent to graduation from a university of recognised standing;  
at least two years of experience in the collection and distribution of publicity material or  
experience of equivalent character and standard,  
a high degree of specialised knowledge of aeronautical subjects ;  
administrative ability ;

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<sup>143</sup> CIVIL SERVICE COMMISSION OF CANADA - POSITIONS VACANT List No. 10 : Canada Gazette volume 53, number 32, 7 February 1920, page 49



## Notes on "Civil Aviation"

tact and good judgment.

### Duties:

Under direction,

- to gather and distribute information relative to aviation, aeronautical science, aero plane production, and all related subjects ;
- to supervise the preparation and editing of the Aeronautical Year Book ;
- to assist the Secretary, Air Board, in the administration of the Office, as assigned, and
- to act for the Secretary, Air Board, in his absence ; and
- to perform other related work all required .

Candidates for this position will be examined in the following subjects, which have the relative weights indicated :

Education, Training and Experience, 300 ;

Oral Interview, if necessary in the opinion of the Commission, 100

20 February 1920 : Canada Gazette NOTICE : Government of Canada Publications : Government publications is inserted in the Canada Gazette in conformity with Order in Council (P.C. 1522) of 28th October, 1915, which calls for the publication of such lists from week to week. When the title appears in English it will be understood that the volume is printed in English ; when the title is French, it means that the report is printed in the French language

List of Government publications published in the Gazette related to the Air Board

1. Air Administration in Canada<sup>144</sup>, <sup>145</sup>
2. Rèlements régissant la Navigation Aérienne, 1920 <sup>146</sup> (Regulations governing Air Navigation, 1920)
3. Report of Air Board for year ending March 31, 1919 <sup>147</sup>

### 1920 GOVERNMENT NOTICES : AIR BOARD <sup>148</sup>

1. Air Regulations, 1920, amended - Canada Gazette pg ref # 3436
2. Customs Air Harbours established - Canada Gazette pg ref # 3542
3. Customs Air Harbour (seaplane) established at Fredericton . N .B - Canada Gazette pg ref # 3645
4. Customs Air Harbour established at Moose Jaw • Saskatchewan - Canada Gazette pg ref # 52:19
5. Municipality of Virden, Manitoba authorized to use certain land as a Public Customs Air Harbour - Canada Gazette pg ref # 98 (143 )

29 March 1920 : Montreal, QC : In the Montreal Star F. Handley Page is quoted during his visit as saying:

1. "in the matter of licensing and controlling machines and joining in the world's international air regulations, Canada was away ahead of the United States" and that
2. "his Firm had made some very important discoveries in its research department" and that
3. "We look forward to the time very shortly when we will be able to reduce the horse-power down to a third of the present amount and get the same results ; and, similarly, we shall be able to make smaller machines of very much less horsepower than the 80 or 100 h.p. planes now in use. We anticipate being able to make a machine of 25 horsepower, carrying a pilot and passenger at 105 miles an hour for five hours, and costing about a thousand dollars."

31 March 1920 : Miss Elizabeth Regan, Clerk-Stenographer transfer to the Canadian Air Board from the Dept. of Militia and Defence becomes effective. <sup>149</sup>

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<sup>144</sup> Canada Gazette volume 53, number 34, 21 February 1920, page 54

<sup>145</sup> Canada Gazette volume 53, number 38, 20 March 1920, page 45

<sup>146</sup> Canada Gazette volume 53, number 43, 24 April 1920, page 51

<sup>147</sup> Canada Gazette volume 53, number 43, 24 April 1920, page 51

<sup>148</sup> Canada Gazette : volume 54, Annual Index, July 1920, page 55

<sup>149</sup> Canada Gazette volume 53, number 41, 10 April 1920, page 12

## Notes on "Civil Aviation"

January 1920 : Major D. R. McLaren appointed *Attache to the British Air Board*. - British Air Board DOES NOT EXIST! Air Ministry ...

June 1920 : Commander Raymond Collishaw, D.S.O. and Bar, D.F.C., D.S.C., etc., in command of the British Air Squadron under General Denikine in South Russia, returns to Canada after a series of extraordinary adventures and exploits.

In respect to the supposed dangers of commercial aviation, the British Air Ministry published figures as to accidents in the United Kingdom during the last seven months of 1919 and they showed 35,330 flights by 403 machines with a total time in the air of 8,368 hours, during which time 593,000 miles were travelled, with one passenger killed to every 16,666 passenger hours in the air or, as it was differently put, a single passenger might expect to fly about 1,180,000 miles, equal to flying 47 times around the world before becoming the victim of a fatal crash.

12 February 1920 : Ottawa : J.A. Wilson of the Air Board states :

"The Air-Co. London-Paris mail and passenger service had been running daily for seven months with only five flights interrupted by mechanical defect. They had proved their ability to operate this service under most adverse weather conditions, through fogs and gales, and had made the cross channel flight several times when no steamers could cross. So far they had had one serious accident only, with the loss of one life. Their mileage was now over 60,000 flown at an average speed of 101 miles per hour. The London-Brussels service of the same firm during the same time carried 251 passengers and 26,000 pounds of mail and freight, also without accident, their mileage being 26,000. During the first six months of civil flying, in over 300,000 flying hours, there were only 13 accidents and two fatalities in Great Britain. Considering the lack of experience and imperfect organization, this showed the comparative safety of modern flying."

1920 : UK : Lloyds Register had set up an Aviation Department to provide a system of classification of aircraft and to compile a register of aircraft and pilots.

January 1920 : UK : The Department of Civil Aviation instituted the system of issuing "Notices to Airmen," on lines similar to the "Notices to Mariners" issued by the Admiralty.

It was announced that from Sept. 2nd, 1919, to Jan. 1st, 1920, Flandley Page Transport, Ltd., had carried 618 passengers and 16,982 lb. of freight between London and Paris, and between Sept. 26th, 1919, and Jan. 1st, 1920, had carried 251 passengers and 25,883 lb. of freight between London and Brussels.

On Jan. 8th, Messrs. Parer and Macintosh left Hounslow on a D.F.I.9 (Siddley "Puma" engine), en route for Australia.

On Jan. 10th, official particulars were published concerning the issue of airworthiness certificates to commercial aeroplanes.

The composition of the new *Council of the Institute of Aeronautical Engineers* was announced on Jan. 14th

On Jan. 21st the Committee of the Royal Aero Club passed new rules for the tests for Aviators' Certificates.

At a meeting held at Cambridge on Jan. 21st, the "Cambridge University Aeronautical Society" was formed.

On Jan. 24th Capts. Broome and Cockerell left Brooklands on a Yickers "Vimy" (Rolls-Royce engines) intending to fly to Cape Town. This machine was chartered by the Times newspaper.

On Jan. 25th this paper published a letter to the shareholders

of the Birmingham Small Arms Co., Ltd. (associated with the Daimler Co.) in which the Directors of that firm announced an amalgamation with the Aircraft Mfg. Co., Ltd.

It is important at this date to note the phrase "It (the Airco) holds and, // desirable, can retain a unique position in all matters connected with aviation." The Airco is now in the hands of its Debejiture holders.<sup>150</sup>

01 January 1920 : FAI begins publishing quarterly bulletins of interest to "Aviators"

02 January 1920 : Former RFC/RAF officers recruited for the Air Board are assembled in Ottawa.

17 January 1920 : Canada Gazette publishes :

- I. the Air Regulations,
- II. Air Board Act,

## Notes on "Civil Aviation"

III. the Convention Relating to International Air navigation and

IV. Forms to be used with these documents.

17 January 1920 : With the publishing of the "Air Regulations", the following now apply:

- A. Canadian Aircraft are now required to be certified as "Air-Worthy".
- B. All pilots, air engineers, and aircraft to be licensed with the Air Board
- C. Journey and Aircraft Log-books were to be used and kept up to date.
- D. All Pilot's Licenses were to be "Awarded" by the Air Board Certification Branch after "Study and Testing".
- E. Pilots licenses are issued on condition that the holder could be called up for Military Service.

Barker and Bishop rankled by this - Felt the Air board to onerous.. felt humiliated.<sup>151</sup>

24 January 1920 : Lt.-Col. James Stanley Scott, MC, AFC : Superintendent of the Certification Branch / Lic. of aviation personnel / Lic. of Aircraft / Lic. of harbours on land & water issues himself the first private Pilot's License in Canada.

February 1920 : Canadian Air Force assumes responsibility for investigation of all Canadian aircraft accidents (Service and Civilian). When notified by of an accident telegram, a Board of Inquiry was to be convened, the CAF then sent the local Senior Flying Officer to investigate the cause and report back. Findings of the BOI were to be forwarded to the CAF HQ which performed statistical and reporting function only.

10 february 1920 : The Aeroplane publishes an account of the entire reformation of the Aero Club of Canada, which thenceforth came under the control of practical aviators, mostly with war experience.

The formation of Bishop-Barker Aeroplanes, Ltd., in Toronto, with a capital of \$300,000, was recorded in this paper on 11 Feb. 1920

pre Feb 1918 : A. Day: Memo : "Design Requirements for Military Aircraft" ( Some Contributions to the Theory of Engineering Structures, with special reference to the Aeroplane,' April 1915, by M. Booth and H. Bolas, commonly known as 'H.B. squared')

February 1918 : Basic United Kingdom airworthiness procedures are first "published" by the UK Ministry of Munitions.

- a) "airworthiness procedures" volume known the "Handbook of Strength Calculations (**Secret and Confidential**) H.B. 806 - published by Ministry of Munitions in conjunction with the UK National Physical Laboratory) Authors Alfred John Sutton Pippard MBE FRS ( in charge of the Air Department of the Admiralty), and J. L. Pritchard, his second in command. They collaborated in the first textbook on Aeroplane Structures in English - FLIGHT International, 6 June 1968 page 858) and J. Laurence Pritchard, 122 pages (THE CAREER AND WORK OF Alfred John Sutton Pippard)

1891 : Alfred John Sutton Pippard born in Yeovil, educated at Yeovil School.

Alfred John Sutton Pippard attends Bristol University - studies civil engineering.

1911 : Alfred John Sutton Pippard Graduates Bristol University in 1911

1911 - 1913 : Alfred John Sutton Pippard spends 2 years as an articled assistant in the Bristol office of consultant engineer A.P. Cotterell.

1913 - 1915 : Alfred John Sutton Pippard becomes assistant engineer with the Pontypridd & Rhonda Valley Joint Water Board.

1915 : Alfred John Sutton Pippard appointed technical adviser to UK War Office - Admiralty - Director of the Air - air-craft Structures section. J. Laurence Pritchard is his second in command.

1915 - 1918 : Alfred John Sutton Pippard is a significant contributor within the "Structures Section" on improving the safety of UK Military aircraft - advancing aircraft structural science.

1 January 1918 : Alfred John Sutton Pippard made Member of the Order of the British Empire for his contribution to the war effort.

February 1918 : Alfred John Sutton Pippard & J. Laurence Pritchard co-author HB 806, the first textbook on Aeroplane Structures to be published in English.

23 February 1920: Handley Page Transport : Handley Page Type O/400 Ser. No. HP-07 G-EANV carrying 10 people crashes at Acadia Siding, Cape Province, SA - Damaged beyond repair in a forced landing when the rudder came out of its bearing<sup>152</sup>.

25 February 1920 : Handley Page Transport : Handley Page Type O/400 Ser. No. HP-27 G-EAMC crashes in El Shereik, Sudan during an attempt to be the first airplane to fly from London to Cape Town, South Africa.

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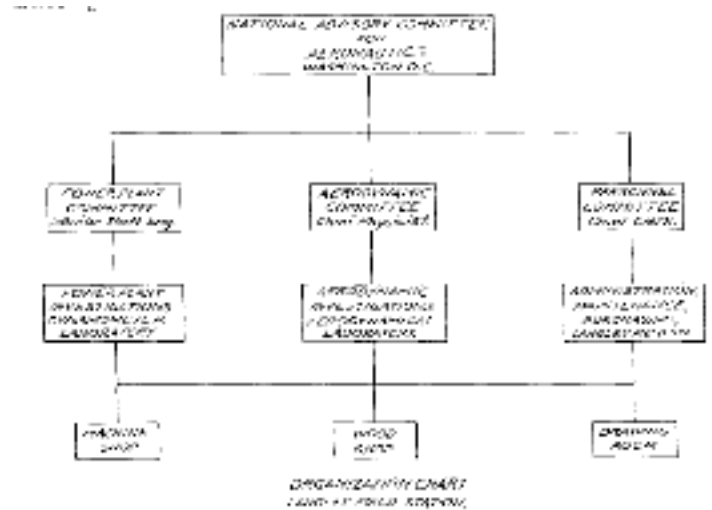
<sup>151</sup> (Source ref: Brace for Impact: Air Crashes and Aviation Safety By Peter Pigott, Dundurn, Jun 18, 2016)

<sup>152</sup> Aeroplane, March 2012 p. 80-81

## Notes on “Civil Aviation”

10 March 1920 : "The Aeroplane" publishes the first precis of the Canadian air navigation regulations.

25 May 1920 : Atlantic City, New Jersey, USA : The 3rd Pan-American Aeronautic Congress. A regular (wage) scale (was established) for pilots (and then also) down to *the man who handled the minor details on the ground*, was officially adopted. These rates provided for a minimum retaining fee for pilots of \$1,000, payable at \$150 a month and in force if, through no fault of his, the aviator should not fly. In addition, the following hourly pay was stipulated : For single motor ships, one to thirty hours, \$1.72 an hour; 31 to 60 hours, \$2.25; 61 to 90 hours, \$2.75; 91 to 120 hours, \$3.25; 121 to 150 hours, \$3.75. An additional 25 cents an hour was given to operators for two or more motored ships. These figures stood for two great Aerial lines one transcontinental and the other following the waterways.



27 May 1920 - FLIGHT Aerial Police for Canada? IT has been suggested by a member of the Canadian Air Board that air service stations should be established in North Saskatchewan, and aircraft used to patrol the northern areas for police purposes, and to photograph unsurveyed parts to find land suitable for farming. src FLIGHT pg 568 MAY 27, 1920

27 May 1920 - FLIGHT pg 574 - IN view of its unique character, and to show what Canada is doing, we reproduce herewith the first report of the Canadian Air Board—that for the year ending March 31, 1920.

The Canadian Air Board consists of the Rt. Hon. A. L. Sifton, P.C., K.C., Chairman ; Mr. O. M. Biggar, K.C., Vice-Chairman ; the Hon. S. C. Mewburn, C.M.G. ; the Hon. .C. C. Ballantyne; Dr. R. M. Coulter; Mr. J. A. Wilson; Mr. E. S. Busby ; while the heads of branches are Lieut.-Col. R. Leckie, D.S.O., D.S.C., D.F.C., Superintendent of Flying Operations ; Lieut.-Col. J. S. Scott, M.C., A.F.C., Superintendent of Certificates Branch ; Major A. M. Shook, D.S.O., D.F.C., A.F.C., Secretary.

1. General.—The Air Board Act was assented to on June 6, 1919, and by Order in Council dated June 23 (P.C. 1295), the Hon. A. L. Sifton was named as Chairman of the Board, Col. O. M. Biggar, Judge Advocate-General, as Vice-Chairman ; the Hon. S. C. Mewburn, Minister of Militia and Defence, as the representative on the Board of the Department of Militia and Defence ; the Hon. C. C. Ballantyne, Minister of the Naval Service, as the representative on the Board of the Department of the Naval Service, and Dr. R. M. Coulter, C.M.G., Deputy Postmaster-General, Mr. J. A. Wilson, Assistant Deputy Minister, Department of the Naval Service, and Mr. E. S. Busby, Chief Inspector of the Department of Customs and Inland Revenue, as the remaining members of the Board.

The Board was called together immediately, and considered the organisation of a staff. After consultation with the Civil Service Commission, it was decided that the work under the Board should be divided into three branches, having at their heads respectively a Superintendent of Flying Operations, a Superintendent, Certificate Branch, and a Secretary, the proposal being that the Secretary should administer the internal office organisation, that the Superintendent of Flying Operations should control all civil government flying, and that the Superintendent of the Certificate Branch should conduct that portion of the administration which related to the public and was concerned with the licensing of personnel, aircraft and air harbours. The organisation thus outlined was formally communicated to the Civil Service Commission on July 15, with a request that provision should at once be made for the appointment of these three officers and a medical officer for the Certificate Branch. No appointments were, however, made until after some time, and the first appointees assumed their duties as follows :—on November 3, Lieut.-Col. J. Stanley Scott, M.C., A.F.C., Superintendent, Certificate Branch ; on November 10, Major A. M. Shook, D.F.O., D.F.C., and Croix de Guerre, Secretary, and Capt. F. R. Smith, Medical Officer ; and on December 15, Lieut. Col. Robert Leckie, D.S.O., D.S.C., D.F.C., Superintendent of Flying Operations.

Permanent office accommodation was made available for the Board's staff only on December 24.

2. **Air Regulations.**—The only step which, before the appointment of technical officers, it was possible to take in the direction of regulating and controlling aerial navigation was to prohibit dangerous flying. An Order in Council for this purpose was passed on July 7 (P.C. 1379). The drafting of a complete set of regulations was, however, proceeded with, and was completed in time for their submission to and approval by the Governor in Council on December 31. The

## Notes on "Civil Aviation"

Canada Gazette containing the regulations was published on January 17, 1920, and at the same time there was ready for distribution a book containing not only the regulations, but also the forms settled for use under them, the Air Board Act and the Convention relating to International Air Navigation as drafted by a sub-commission constituted as part of the organisation of the Peace Conference and approved by the Supreme Council. This book has already had a wide distribution.

3. Preliminary Surveys for Operations.—In November steps were taken to have made a preliminary survey with a view to ascertaining what public services could more efficiently' and in the broadest sense more economically, be performed by air than by existing methods. Canada was, for this purpose, divided into four parts, and ex-Royal Air Force officers borrowed or temporarily employed for the purpose.

The survey was completed by the end of the year, and on January 2 these officers were assembled at Ottawa and the situation was thoroughly canvassed, with the result that it was decided that the most favourable fields for the commencement of operations were the less thickly settled and less thoroughly explored portions of Canada.

An interdepartmental conference was accordingly held on January 10. An agenda for this conference, including memoranda on the probable cost of operating aircraft and on their use for purposes of survey and for fire protection, was distributed, and a number of places were named as possible air stations, upon the utility of each of which discussion was invited.

The usefulness of this preliminary conference was reduced by the non-participation of some of the departments which it was expected would be interested, but special discussions have since been carried on with those departments which were represented and some others. Proposals have been formulated for operations next summer.

4. Scientific Research. —Among the duties imposed upon the Board is that of undertaking technical research for the development of aeronautics and of co-operating for that purpose with other institutions.

In execution of this duty, discussions took place with the Honorary *Advisory Council for Scientific and Industrial Research*, which resulted in the formation under that Council of an *Associate Air Research Committee*, which held its first meeting on February 7.

Prof. A. S. Eve, Professor of Physics at McGill University Chairman of the Committee, and

Mr. R. J. Durley, Secretary of the Engineering Standards Association, as Secretary.

Prof. J.C. McLennan, Professor of Physics of the University of Toronto, and

*Mr. J. R. Parkin, lecturer in the faculty of applied science in that university.*

*This Committee will work in the closest co-operation with the officers of the Air Board, and will co-ordinate aeronautic research throughout Canada.*

5. Meteorological Development. —The importance of meteorological information to air navigation cannot be overestimated, and arrangements have been completed with Sir Frederick Stupart looking towards the necessary developments of the meteorological reports, the undertaking of meteorological observations at air stations operated under the Air Board, and the distribution of meteorological information.

6. Wireless Installations and Navigators' Certificates. — The development of air navigation will involve a considerable extension of wireless communication, and arrangements have been made with the General Superintendent, Government Radio Telegraph Service in the Department of Naval Service, for this purpose. Air pilots who require wireless qualifications will obtain them through that department, by which will be issued licences for the necessary installations both in aircraft and on the ground. That department has an organisation extending throughout Canada, and duplication of officers is thus avoided. Like arrangements are expected to be made with the Department of Marine and Fisheries for the issue of navigators' certificates to air pilots who desire or need them. The existing organisation under that department extends throughout Canada, and undertakes the examination and qualification of marine navigators. As the problems met with in air navigation are very similar to those which present themselves in marine navigation this arrangement is expected to be both economical and satisfactory.

7. Aircraft and Equipment. —Negotiations have been entered into looking towards the taking over by the Air Board of the seaplane stations erected during the War by the Department of the Naval Service at Halifax and Sydney, and that portion of Camp Borden which was developed as an aerodrome by the Royal Air Force and acquired by the Department of Militia and Defence after the conclusion of the War. The equipment, which will come under the control of the Air Board from these sources, has an estimated value of \$170,000. In addition to the aircraft and equipment thus acquired, 16 machines of an approximate value of \$100,000 are being received from the Air Ministry by way of replacement of those presented from time to time during the War to the Canadian forces through the activities of the Overseas Club, and the Imperial Government is also presenting to Canada aircraft and equipment of the value of about \$5,000,000, including 80 aeroplanes, 14 flying boats, 12 airships, 6 kite balloons with inflating plants and sheds, 300 motor and other vehicles and a substantial amount of armament, wireless instruments, cameras and other technical

## Notes on "Civil Aviation"

and general stores. A considerable part of this gift has already been shipped, and shipment of the remainder will not be long delayed.

### 8. Mapping

At the request of the Air Board, the Dominion Geographer has commenced the preparation of aeronautical maps on the system laid down in the Convention relating to International Air Navigation. (I.C.A.N)

The process of completing the mapping of Canada on this system will necessarily be a very long one.

### 9. Canadian Air Force

The question of the constitution of a Canadian Air Force was an early subject of consideration by the Air Board, and on December 22 there was adopted for submission to Privy Council, a memorandum covering the general lines of the organisation *proposed*.

A final decision on this subject was, however, postponed until the general policy with regard to Canada's future sea, land and air forces was determined, and it has consequently not been possible to take any further steps in this direction. *The very large number of ex-officers and airmen of the Royal Air Force in Canada are expected enthusiastically to support the proposals* if it is found possible to adopt them.

### 10. Aeronautic Intelligence.

The Air Board Act imposes upon the Board a duty "*to study the development of aeronautics in Canada and other countries.*"

In the execution of this duty *the Air Board has had the advantage of the work* done before its constitution by the Intelligence Branch of the Canadian Air Force under the Ministry of the Overseas Military Forces of Canada. *During the two years of its existence in London, the Intelligence Branch of the Canadian Air Force under the Ministry of the Overseas Military Forces of Canada collected material of very great interest and value*, and its papers were, in the course of demobilisation of the Canadian Expeditionary Force, *transferred to the Air Board*, which also secured the services of one of the officers chiefly responsible for its administration.

The Air Board, consequently, has available fairly complete sets of drawings of almost all standard British machines, engines and equipment, with specifications for the construction of many of them, *and has also an adequate collection of technical publications, reports and documents*. The Intelligence Branch of the Canadian Air Force, O.M.F.C., established communication with the chief aircraft manufacturing companies, and this communication has been maintained, with the result that the Air Board secures early information of developments in design and of inventions having an importance from an aeronautical point of view. With this material it is able to deal with the problems which present themselves to commercial and other companies, and which require solution in connection with operations undertaken on behalf of the Government. Report of the Canadian Air Board for the Fiscal Year ending March 31, 1920. The Air Board, Ottawa, Canada.

27 May 1920 : ROYAL AERONAUTICAL SOCIETY NOTICES : Examinations.

The Examinations Committee have presented a preliminary report to the Council on the qualifications for Associate Fellowship which should be accepted in lieu of the Society's own examinations. These are grouped under three heads :

- (a) General Education,
- (b) Technical Qualifications,
- (c) Aeronautical Qualifications.

In addition it is recommended that an age limit should be fixed and a certain number of years' experience in the application of science to aeronautics be required.

27 May 1920 : England : AVIATION IN PARLIAMENT : House of Commons on May 17.

MR. HOPKINS : asks the Secretary of State for War and Air

1. what are the centres at which demobilised officers and men of the Air Service can obtain at the present time instruction in aeronautical engineering ;
2. whether the facilities at the centres in question are adequate ; and
3. to what extent the Air Ministry or other Government Department is at the present time giving financial or other assistance to these centres for the specific purpose of developing instruction in aeronautical engineering ?

Mr. Churchill: The whole question of education and research in aeronautics was considered by *a Committee under the Chairmanship of Sir Richard Glazebrook*. My hon. friend can obtain a copy of *this Committee's Report dated 12 December 1919* which has been adopted by the Government and which sets forth proposals for the establishment of a school of aeronautics at the imperial college, south kensington. Instruction in the subject is also given, i understand, at East London college and at the cambridge university.

*I do not think it is possible to say at this stage whether the facilities provided will prove to be adequate.*



## Notes on "Civil Aviation"

With regard to the last part of the question, my hon. friend will find that *the Report provides for an annual expenditure of approximately £10,000 in connection with the South Kensington scheme*. This charge will be borne, during the current year, by the Department of Scientific and Industrial Research"

The RAF consists of the following branches : Administrative Branch Technical Branch Flying Branch Medical Branch Physical Training Branch Short Service Long Service and Permanent service Commissions.

The N in N.C.4 flying boat N- Nicholson, C- Curtiss

"CANADIAN AVIATOR, LIMITED"

Incorporated on April 1, 1920 ----- Share Capital, \$ 40,000.

Number of shares, 400. â € "Amount of each share, \$ 100.

Members of the corporation. David Blythe Hanna, President, Canadian National Railways; Alfred James Mitchell, Vice President, Canadian National Railways; Gerry Ruel, General Counsel, Canadian National Railways; and Robert Charles Vaughan, Assistant to the President, Canadian National Railways, all of Toronto, ON, and Graham Airdrie Bell, of Ottawa, ON, Deputy Minister of Roads Iron and Channels.

First or interim directors. â € "The aforementioned members.

Headquarters. â € "Toronto, Ont.

Object of the company. â € "See p. 3632, Canada Gazette, 1919-20.

Civil Service Commission of Canada : The Civil Service Commission wishes to express its gratitude to the people mentioned below who willingly, and often in a relaxed manner, made important services by forming part of the offices of examiners in a certain number of special competitions held under the authority of the Commission.

Major L. S. Breadner, Airman Examiner, Air Force Bureau.

Capt. G. O. Johnson, Superintendent of Personnel, Division of Works, Office of aviation.

Lt.-Col. Robert Leckie, Office of Aviation

Note. â € "Except when it says otherwise, the address is" Ottawa ".

28 May 1920 : Arthur K. Colley and mechanic W.C. Landrigan fly a Curtiss "JN4C" Canuck" from Leaside aerodrome, Toronto to Eastwood Parke, Hamilton carrying a special Air Mail in connection with an Athletic Carnival in Toronto. The "Grand Army of Canada" [United Veterans] print a \$1 stamp with the authorisation of the post office.

31 May 1920 : The USA signs the International Air Convention (with certain reservations) by 07 July 1920 ICAN has been signed by all the Allied and Associated Powers.

05 April 1920 : The Aeroplane : The appointment of Dr. Leonard Bairstow, C.B.E., F.R.S., to be Professor of Aerodynamics at the Imperial College of Science and Technology, was announced on April 5th.

09 May 1920 : The Aeroplane : The Canadian Air Board's official announcement of the formation of the Canadian Air Force was published on May 19th.

12 GEORGE V PARLIAMENTARY PAPER No. 29 A. 1922

## DIVISION OF COMPANIES

The number of companies incorporated under the authority of the law of Companies, and the amending laws, were 852 during the 1920-21 fiscal year (there including 25 corporations without share capital), with total capital of \$ 752,062,683.32; the number of companies in existence that have been granted supplementary letters patent was 229, of which 135 had a capital increase of \$ 79,803,000, 17 with diminished capital of \$ 7,698,300, the remaining 77 obtaining additional letters patent for purposes various to know name change, increase of powers, etc., all coming To constitute a total of 1,081 additional charters and charters issued during exercise; the total capital of the new companies and the net increase of the capital of the companies in existence, it amounted to \$ 824,267,383.32, total maximum. Attached are the usual synoptic tables (with tables of materials) providing all the details of the incorporation of all companies, as well as those of all the companies in existence to whom we have granted during the exercise of supplementary letters patent.

The total number of mortgages or charges recorded in accordance with The provisions of Section 69A of the Companies Act was 62 for the fiscal year.

The total number of companies that provided the summary required by section 106 of the Companies Act, for the fiscal year ended March 31, 1920, up to and including March 31, 1921, is 3,200; an increase of 875 on the figure from the previous year (2,325). We also received 805 reports for the March 31, 1918 and 1919, making a total of 4,005 reports received during last fiscal year.

We see that companies are increasingly complying with the requirements of section 106 of the Companies Act. However, several companies are still at fault in this respect and should comply with the law without further delay. **SYNOPTIC TABLE OF LETTERS PATENTES PROPOSED IN FAVOR OF COMPANIES (Businesses) ESTABLISHED INTO A CORPORATION UNDER THE AUTHORITY OF THE COMPANIES ACT, PART I OF CHAPTER 79, S.C., OF 1906, AND MODIFYING LAWS, FROM APRIL 1, 1920, TO MARCH 31, 1921**

PARLIAMENTARY PAPERS - VOLUME 8 - FIRST SESSION OF THE FOURTEENTH PARLIAMENT OF THE Dominion OF CANADA - SESSION 1922 - VOLUME LVIII - Dept of the Sec of State - Letters patent issued : pg 75

19 June 1920 : Ottawa Canada : Canada Gazette : Public Notice is hereby given that under the First part of Chapter 79 of the Revised Statutes of Canada, 1906, (The revised statutes of Canada, 1906, proclaimed and published under the authority of the act 3 Edward VII., chap. 61 (1903)) known as "The Companies Act" and amending Acts, Letters patent have been issued to the "CANADIAN AIR FORCE ASSOCIATION" under the Seal of the Secretary of State of Canada bearing date the 8th day of June 1920, incorporating:

the Honourable Hugh Guthrie, C.R., a Member of his majesty's Privy Council and one of His Majesty counsel (Minister of Defence);

Oliver Mowat Biggar, C.R., vice-chair of the Air Board and one of His Majesty counsel (Lawyer, second [Judge Advocate General](#) for the [Canadian Forces](#) , first Canadian co-chair of the Canada-United States [Permanent Joint Board on Defense](#). chief legal adviser and member of the Canadian delegation to the 1919 Paris Peace Treaty  
Major-General Sir Willoughby Gwatkin, K.C.M.G, C.B,  
Lieutenant-Colonel Robert Leckie, D.S.O., Superintendent of Air Operations;  
Lieutenant Colonel James Stanley Scott, CM, Superintendent of Certificates,  
Edouard Deville, L.L.D D.T.S Doctor of Laws, A.T.F., Surveyor-General  
all of Ottawa, Ont.

"CANADIAN AIR FORCE ASSOCIATION"

Incorporated on June 8, 1920. **No share capital.**

Members of the corporation.



## Notes on "Civil Aviation"

"Hon. Hugh Guthrie, C.R., Member of the Privy Council His Majesty;  
Oliver Mowat Biggar, C.R., vice-chair of the the AA © AERONAUTICS;  
Sir Willoughby Gwatkin, BCM, BC, Major-General;  
Robert Leckie, O.S.E., Lieutenant-Colonel, Superintendent of Air Operations;  
James Stanley Scott, CM, Lieutenant Colonel, Superintendent of Certificates,  
Edouard Deville, Doctor of Laws, A.T.F., Surveyor-General  
all of the City of Ottawa, in the Province of Ontario

First or interim directors : The aforementioned members.

Headquarters : Ottawa, Ont.

Object of the company : To promote the efficiency and advance the interests of the Canadian Air Force and to assume such share of the administration of such force constituted under the provisions of the Air Board Act 9-10 George V. e 11 as may be authorised by the Governor in Council.

The operations of the corporation to be carried on without share capitol throughout the Dominion of Canada and elsewhere by the name of "Canadian Air Force Association" and the chief office of the said corporation to be at the City of Ottawa, in the Province of Ontario.

Dated at the Office of the Secretary of State, 10th July 1920 - Thomas Mulvey, Under-Secretary of State.

Canada Gazette volume 53, number 51, 19 June 1920, page 35, 1920. (p. 4465)

11 June 1920 : USA : The earliest organization chart of "Langley Field Station" [NACA] appeared 11 June 1920, the day of the Langley dedication ceremonies. A draftsman prepared it with standard engineering lettering. According to the chart the senior staff engineer and the chief physicist are of equal rank.

16 June 1920 : Canadian Minister of Militia and Defence [and Acting Solicitor-General] Hugh Guthrie made a general statement on the motion for- Committee of Supply regarding the Estimates submitted by his Department and the organisation of the Militia and permanent force of Canada.: In 1913-14 the Estimates totalled \$10,917,000. The permanent force of Canada consisted of 2,906 men of all ranks. The permanent force which existed in Canada at this date consisted of exactly 3,555 men. Why should there be an increase shown in the vote if the establishment was about the same ? The reason was that the cost of maintenance to-day was just about double what it was in those years. In the year 1910-11 a private in the permanent force received 50 cents a day, after three years 60 cents, and after six years 75 cents. The pay of a private in the expeditionary force was raised to \$1.10 a day. The new pay regulations provided that a private should receive \$1.70 a day. In 1903 or 1904 Parliament authorised a permanent force to the extent of 5,000 men, but it was never recruited up to that strength. Last year the House of Commons agreed that the permanent force of Canada should be increased to 10,000. For the information of the House he would state what the whole permanent force establishment was. They had the Royal Canadian Horse Artillery stationed at Kingston, a very efficient force, which was used for the training of artillery Militia units.

That was the main purpose of the permanent force. They had only one more regular artillery branch in the Service, and that was the garrison artillery which was stationed at Halifax, Quebec, and on the Pacific Coast. In regard to infantry, they had the Royal Canadian Regiment, the Princess Patricia's Canadian Light Infantry, and a new regiment just formed for the purpose of perpetuating the heroic deeds of the men who formed the overseas regiment known as the 22nd. In cavalry they had two units, the Royal Canadian Dragoons and the Lord Strathcona Horse. In addition they had the Engineering Corps, the Army Service Corps, the Medical Corps, the Dental Corps, a corps of clerks engaged in the Pay Office and two other corps which they had not yet organised, the Signalling Corps and the Army Chaplain Corps.

He had this advantage over all his predecessors in the office of Minister of Militia in that he was surrounded by the ablest and most experienced staff of men who were ever gathered together in Canada. He had on the staff, as the House was aware, as Inspector-General, General Sir Arthur Currie, undoubtedly the greatest soldier the country had ever produced.

The permanent force was their training force ; it was their organising force.

In Ottawa they had the headquarters for Canada, and in addition they had eleven military districts throughout Canada, in each of which they maintained a small staff and a small force of the permanent corps. These were the forces that came into direct contact with the militia units. These were the men who did the actual training, gave the actual instruction, and saw to the actual administration in militia matters generally. Speaking generally, the war resulted in the complete disorganisation of the militia of Canada. A large part of the work at headquarters was to reorganise the militia and to do it as economically, fairly and expeditiously as under the circumstances it could be done.

## Notes on "Civil Aviation"

Returned Officers : They had a tremendous number of returned officers who were very capable men. Naturally they were not able to retain the services of more than a limited number of these excellent officers. In every single instance when an officer with overseas experience had applied for a position in the permanent force his case had been considered in the first instance by a board of selection composed of experienced officers, and if the name was passed by the Inspector-General and the Militia Council it was finally submitted to the Privy Council. There were 140 non-commissioned officers who had obtained commissions when serving overseas. They employed all of that class that they could, but a number of them they had retired on pension. In Great Britain if they could not employ an officer they put him on half pay. They had no system of half pay in this country out of which to provide for officers who had come back and for whom there were not enough positions in the service. Speaking of improvements, the Minister stated that they had in the Department of Militia as fine a corps of engineers as could be found anywhere in the world.

They had a great many engineering services in the Government of Canada apart altogether from the Militia Department. He believed that a system could be worked out whereby all the engineering work of the Government could be performed by engineers of the Militia Department and that the result would be a tremendous saving.

One other suggestion first and foremost among the functions of the Department was the defence of Canada.

The Inspector-General was very strong in the view that all branches of that defence should be centred in a single department ; that they should have in that department not only their permanent forces and their militia, but also their mounted police, their civil police, their Air Board. As the work became reduced, the work now done by the Department of Soldiers' Civil Re-establishment might also be brought under the Department of Militia. The Inspector-General thought that the carrying out of some such plan would result in more efficient co-ordination of work and a tremendous saving in the carrying on of these various services. These were matters which were now under consideration.

the question of the restrictions on the territorial extent of Dominion legislation has been raised in the Dominion of Canada. It has been claimed by high authorities<sup>2</sup> on the Canadian constitution that the right to legislate with extra-territorial effect must be inherent in the powers of the Dominion, since otherwise it would have no power to provide for the discipline overseas of its military forces or the regulation of its naval forces beyond the territorial waters of Canada. The first argument, however, is invalidated by the fact that the Imperial Army Act authorizes the extra-territorial application of Dominion legislation on this topic, and the second by the fact that the same purpose is aimed at as regards Dominion navies by the Imperial Naval Discipline (Dominion Naval Forces) Act, 1911. [...] The Government and Parliament of Canada have finally decided to secure the extension of the powers of the Dominion by requesting an amendment of the British North America Act so as to confer on the legislation of the Dominion extra-territorial effect to the same extent as belongs to legislation of the Imperial Parliament. One immediate ground of seeking this power was afforded by the desire of the Government to legislate regarding

aircraft registered in Canada when flying beyond the strict limits of the Dominion. The decision, however, raises a difficulty since the power of regulating the actions of British subjects beyond British territory, hitherto the sole prerogative of the Imperial Parliament, must be shared with the Dominions. To obviate conflict of jurisdiction it is clearly necessary that each Parliament should confine its authority in actual exercise to those British subjects who by birth or residence are identified with its territory. A precedent for such action exists in the case of merchant shipping, since each Dominion is now expected to regulate British shipping registered in its territory, and the immigration laws of the Dominions have recognized the right of a native of the Dominions or a settler who has effectively established there his home to re-enter his native land or adopted home without complying with the conditions exacted from other British subjects. It will, however, still be necessary for the Imperial Parliament to legislate in certain cases for all classes of British subjects, for instance as

regards the legal position of all British subjects resident in places where the Crown exercises extra-territorial jurisdiction such as China and Persia or the Ottoman territories 153 ... [...] Imperial legislation can apply to a Dominion only with the full assent of that Dominion, which normally will be expressed by a resolution of its Parliament.

The problem of Imperial legislation presents itself with special acuteness in the case of Canada, for the federal Parliament has no power to vary in essentials the constitution provided for it in the British North America Act. It is, therefore, only possible to obtain changes in the constitution when they are supported by the clear wish of the vast majority of the people of Canada as attested by addresses from either house of the Dominion Parliament, and the lack of opposition from the provincial Governments. When in 1907 important changes were made in the subsidies granted by the Dominion to the provinces, the Imperial Government consented to obtain the assent of Parliament to the alterations desired only when they secured assurances that the provinces were willing that the federal compact should thus be varied and an express admission was made that the constitution could not be changed without general assent. In 1915 very necessary changes in the representation of the various parts of the Dominion in the Senate were similarly effected by an Imperial Act after the concurrence of the Senate in the alterations had been procured by concessions made by the Government to the Opposition on matters of importance, including the postponement of the operation of the change until the next general election of the Canadian House of Commons.<sup>1</sup>

The position in Canada is therefore irksome and inconvenient ; changes in the constitution are possible only when they are noncontentious ; any serious difference of opinion would merely result in the refusal of the Imperial Parliament to legislate, and important alterations would inevitably excite sufficient opposition to secure their being left in abeyance. The situation of the Dominion thus compares very unfavourably with that of the Commonwealth, which has ample power of change of constitution, although like Canada its constitution is federal in principle. It has naturally, therefore, been a subject of consideration in the Dominion to discover a basis on which to effect agreement on a method of altering the constitution in which the aid of the Imperial Parliament need not be invoked. So far, however, the attempts made have not been successful, Quebec in particular deprecating any change in a system which assures her the fullest protection for her peculiar position in the Dominion. A curious problem is presented as to the validity of the exercise of the paramount power of Imperial legislation by the passing of the Indemnity Act, 1920, of the Imperial Parliament. That enactment forbids the institution in any court of an action for any proceedings by officers of the Crown or persons acting by their orders in certain circumstances, whether the matters concerned took place within or without His Majesty's dominions. The enactment at first sight would appear to apply to all courts in the Empire, but this interpretation is negatived by the power given in section 7 to apply the Act to any part of His Majesty's dominions except the self-governing Dominions, so that the indemnity has no application directly to matters coming before the courts of these Dominions. On the other hand, the enactment has an indirect effect ; had it not been passed an action could

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<sup>153</sup> Keith, *Journal of Comparative Legislation*, iii, 132-4, and the Canadian Bill of 1920 denning Canadian nationals for League of Nations purposes.

## Notes on "Civil Aviation"

have been brought in England in respect of an illegal act done in one of the self-governing Dominions, unless an Act of Indemnity applicable to the action in question had been passed in the Dominion. But, though the Act does not attempt to interfere with the jurisdiction of Dominion courts, it expressly forbids the British courts to treat as illegal an action done in a Dominion, even if the action is not validated by legislation in that Dominion.

In Canada and in New Zealand the same argument was adduced ; the power to legislate, as conferred by the Imperial Acts constituting the constitutions of the two Dominions, gave them authority only to legislate for the peace, order, and good government of the Dominions ; how, therefore, could they legislate to send troops overseas, and therefore beyond the limits of the Dominion ?

During the war, the organization of a Canadian Naval Air Service was undertaken. [The Imperial Act of 1911 not having been applied to Canada, the validity of its legislation beyond territorial waters was doubtful, and application is accordingly now made for extended powers in this regard (cf. Acland, Journal of Society of Comparative Legislation, xviii. 15-25). In the meantime *an Act of 1918 has rendered the Imperial Act of 1911 applicable to Canada*, and it has so been applied by an Order in Council of June 20, 1920]

09 July 1920 : Ottawa, Ontario : With a civilian force at present hard at work, preparations for the opening of Camp Borden as the chief training centre of the air force are going on apace.

*When completed Camp Borden will be the main Stores depot and repair shop of the air board of Canada, and the camp also will be the chief training centre.*

The camp, which cost \$1,500,000 to build several years ago, contains 121 principal buildings, eighteen of the hangars are completed, and there are also ready workshops and offices and men's quarters. The main aerodrome covers a space one by one and a half miles.

There are at the camp over 100 of the latest type English land machines, and also a considerable number of "boats" with a complete outfit of Instruments and equipment for photography, wireless and gunnery work.

Seventy-five per cent of the machines and equipment given by the British Government to Canada are new on the ground. Officers state that at present prices the gift would cost between five and six million dollars, while at replacement prices the cost would be increased by at least fifty per cent, and some of the material could hardly be secured anywhere. Training is expected to begin in three weeks.

Source ref : Times Columnist : Victoria BC Canada 10 July 1920

09 July 1920 : VANCOUVER, BC : Major F. G. Pinder, of the military branch of the Air Board of Canada, with headquarters at Ottawa, arrived in the city this morning, from the east. He was accompanied by *Major Ker, of Victoria, who returned from Winnipeg, where he attended the conference of the Canadian Air Force Association officials last week.*

While in British Columbia Major Pinder will meet the executive of the British Columbia branch of the C.A.F.A. to formulate plans for the operation of the air militia in this province. Immediate attention is to be paid to arranging for courses of instruction of militia pilots at Camp Borden. He points out that only 8.7 per cent of the pilots enlisted in the C.A. F., at present come from British Columbia, and a strong effort is to be made to bring the numbers up to the proportion of other provinces before the end of July. Tomorrow he will interview the Lieutenant-Governor, chairman of the British Columbia branch of the association.

Source ref : Times Columnist : Victoria BC Canada 10 July 1920

July 1920 - Olympia Aero Show - exhibited :

6 cyl. Siddeley "Puma" Watercooled 250 h.p. (the Standard 6 cyl. of the Royal Air Force).

12 cyl. Siddeley "Tiger" Watercooled 500 h.p.

2 cyl. Armstrong Siddeley Twin Aircooled 45 h.p.

7 cyl. Armstrong Siddeley Radial Aircooled 150 h.p.

14 cyl. Armstrong Siddeley Radial Aircooled 300 h.p

The Air Ministry's Part.

Having thus unburdened one's soul concerning the aeroplane constructors, one desires to refer once more to the Air Ministry exhibits. No visitor to the Show should leave it without making a tour of the galleries. There one finds the difference between the Air Ministry of to-day and the Bolo House of the war. All the Bolos have been cleared out and to-day we are blessed with a number—unfortunately only a small number—of keen and capable practical men who are working strenuously for the progress of aviation.

It was only a fortnight before the Show that the Air Ministry was asked to co-operate in making the affair a success. It has responded nobly. Air Vice-Marshal Ellington's whole Department of Supply and Research has surpassed itself. The once-execrated Aeronautical Inspection Department, under the personal direction of Wmqr-Comrhpnnder Bagnall-Wilde and his chief accomplices Wing Commander Outram and Flt. Lieut. Mansellj have arranged a most convincing show 01 the methods by which the officials of the Department test, check, measure, gauge, and otherwise manipulate aircraft and aircraft components so as to ensure their being fit not only to use without danger to pilots and passengers, and the Great British Public on the ground, but to uphold the reputation of British manufactured products all over the world.

Similarly, the Department of Research, under Air Commodore Brooke-Popham, has laid itself out to demonstrate how it sets about testing and developing new ideas which are submitted to it or which it evolves from its own inner consciousness. In this section the Royal Aircraft Establishment, under Mr. Sydney Smith, once so ill-beloved as the Royal Aircraft Factory and now one of the greatest helps to the Aircraft Industry, contributes a number of most interesting examples of its work.

It would require several issues of this paper to describe adequately all the tricks and dodges and gadgets and bits and pieces displayed by these Departments. With paper ar<d printing at its present prices one cannot even think about describing these exhibits. One can only advise everybody to go and see for themselves how well the progress of British aircraft design and construction is helped "by the Air Ministry as at present constituted, and how well the reputation of British aircraft is safeguarded.

Truly, the technical side of the Air Ministry deserves a special vote of thanks from all concerned with British aviation for the way in which it is advertising at Olympia the excellence of our British Aircraft. Probably in this instance virtue is its own, and only, rewad. Those concerned with these exhibits must be feeling uncomfortably virtuous, and so one is promising oneself the pleasure, when the next Show-Report Issue of this paper—dealing with the engines and components—has been safely compiled, of spending a happy day in the Gallery of Olympia basking in this atmosphere of virtue and, so to speak, sitting at the feet of the Gamaliels of the Technical Departments.

## Notes on "Civil Aviation"

One believes that, reckoning the training establishments only, each war pilot cost about 10,000 pounds to produce, including his crashes in training and omitting his active service crashes. The Aeroplane July 14, 1920 pg 86

### THE WRIGHT PATENTS AND AN INJUNCTION.

In the New York Law Courts on July 10th, Federal Judge Thomas Chatfield granted a perpetual injunction against the sale or use in the United States of America of any foreign-built machines embodying features which are an infringement of the Wright patents. The injunction was granted to the Wright Aeronautical Corporation of Paterson, New Jersey, in a suit against the Inter-Allied Corporation of New York—an offshoot of Handley Page, Ltd.

- A similar action is to be opened against the Aerial Transport Corporation of Delaware, a company formed recently to supply surplus British aircraft in an aerial service between Chicago and New York. This injunction would appear to be effective against all aircraft the maintenance of lateral stability in which is by means of warping wings or any form of horizontal ailerons.

### SIX MONTHS OF CIVIL AVIATION-II.

The Dominions, India, and the Colonies.

Arrangements are being made to secure "the greatest possible measure of uniformity" between Air Regulations of each unit of the Empire. The "Air Navigation Bill provides for the adaptation by Order in Council to British Possessions, exclusive of the self-governing Dominions and India, of the legislation in force in this country." India and Canada have formed Air Boards and have published Air Regulations.

The Colonial Office, the India Office, and the Foreign Office (for Egypt) are working with the Air Ministry to effect interchanges of opinion between the Dominions and Colonies and Great Britain.

In Australia an "Air Services Committee" deals with aviation questions. The administration of Civil Aviation is now under consideration. A gift of one hundred aeroplanes has been accepted from the British Government. The Canadian Air Board Act was passed in January, 1919, of from five to seven members appointed by the Governor in Council. The duties of the Board resemble those of the Air Council in Great Britain. A Superintendent of Flying Operations, with a seat on the Board, "controls the licensing of personnel, aircraft, and air harbours, and is responsible for Civil Aviation conducted by private enterprise."

An Associate Air Research Committee, formed under the Honorary Advisory Council for Scientific and Industrial Research, began its sittings on Feb. 7th, and is in close cooperation with the Board. Dangerous flying was prohibited by Order in Council on July 7th, and Civil Aviation Regulations were issued on Jan. 17th last. Experiments in photo-topographical surveying have been authorised in the Province of Quebec.

Licences. to March 31st, 1920.

During the past six months under review the following licences and certificates have been granted in the empire:

Licences for ground engineers 113 ..Total issued since May 1st, 1919 = 345

Licences for engineers 1 Total issued since May 1st, 1919 = 1

09 September 1920 : IT is hereby notified [Flight 09 Sept 1920] :

In accordance with the provisions of the Air Navigation Regulations, 1919, Schedule 5, "Standard Log Books" have now been prepared for use by firms, pilots and others engaged in civil flying and are available at the prices shown :—  
Pilot's Log Book. C.A. Form 24. Price 2s.

## Notes on "Civil Aviation"

Journey Log Book. C.A. Form 26. Price 4s.

Aircraft Log Book. C.A. Form 27. Price 3s. 6d.

Engine Log Book. C.A. Form 28. Price 3s. 6d.

The books are obtainable through any bookseller or direct from H.M. Stationery Office, Imperial House, Kingsway, London, W.C.2, or their agents. N.B.—This Notice cancels Air Ministry Communique No. 381 of November 14, 1919, which authorised temporarily the use of R.A.F. type Log Books. (Notice to Airmen, No. 92.)

Air Ministry, C.A. Form 2A and

Air Ministry, C.A. Form 61 - medical form.

28 July 1920 : UK - Aeronautical Engineering - supplement to The Aeroplane, pg 260 : The Canadian Liaison Officer in London, Major D. R. McClaren, D.S.O., Canadian Air Board, Air Ministry, Kingsway, W.C.2.

11 August 1920 : "The Aeroplane Vol XIX No. 6 : cover : ON AIRWORTHINESS : The Benefits of Accidents.

When the Marquess of Londonderry, our very excellent Under-Secretary of State for Air, introduced the new Bill in the House of Lords on May nth, he put the case with his usual brevity and lucidity.

He said : "The first essential is to have some proper authority to find out exactly the cause of each accident, so far as it is discoverable, with a view to obtaining the same degree of safety as is possessed by railway administration to-day.

A second reason is that comparative safety is essential to the development of civil aviation as a recognised method of public transport of passengers.

"There have been 28 civil accidents between May 1st, 1919, and March 31st last, and the experience gained in investigating them has been of great value. It is, however, essential, from the fact that aircraft usually crash in private property, to have right of access to such property, to investigate the debris, and to prevent the machine being removed pending the inquiry. It is considered necessary to take power to hold a formal investigation of the same kind as is conferred on the Board of Trade under the Regulation of Railways Act, 1871."

### **A Powerless Power in the Land.**

Many people are under the impression that the Air Ministry has absolute power over the doings of all aviators and over all who own or operate aircraft. As a matter of fact the Air Ministry has very little power of any sort until the new Bill becomes law. The Air Ministry certainly has the power to grant licences to aviators and to grant airworthiness certificates to aeroplanes, but, so far as one can discover, the Air Ministry as such has no power to prosecute an unlicensed pilot for flying an uncertified machine.

Nor has it actual power to investigate accidents—as Lord Londonderry's speech shows.

It is true that the local police can prosecute if they think fit. For example, they prosecuted a pilot at Fenny (or Stoney) Stratford who was taking up passengers "for fee or reward" without a licence while on his way to Coventry. But the Air Ministry itself could not, one believes, have instituted the prosecution.

Furthermore, it appears that when once a pilot has been licensed his licence cannot be withdrawn or cancelled or endorsed. The worst that can happen to him when once he has got his licence is that he may be turned down by the medical people when he comes up for his six-monthly inspection.

Also, when once a machine has been passed as airworthy its certificate cannot be withdrawn, and it can be used in a thoroughly unfit state so long as a "licensed ground engineer," who is as often as not an employee of the owner or operator of the machine, can be induced to sign for its airworthiness day by day.

If anybody is killed, or seriously damaged, by the carelessness or incompetence of the pilot, or through the unfitness of the machine, then the Common or Criminal Law of the Land applies.

But the Air Ministry itself cannot prevent accidents by forbidding the pilot to fly or forbidding the use of the machine when once certificates or licences have been issued.

### **The New Power in the Air.**

Therefore is it eminently satisfactory to find the following section in the new Bill:

## Notes on "Civil Aviation"

Sect 12.

(1) The Secretary of State may make regulations providing for the investigation of any accident arising out of or in the course of air navigation and occurring in or over the British Islands or the territorial waters adjacent thereto, or to British aircraft elsewhere.

(2) Without prejudice to the generality of the foregoing provision regulations under this section may contain provisions:

(a) Requiring notice to be given of any such accident as aforesaid in such manner and by such persons as may be specified in the order.

(b) Applying, with or without modification, for the purpose of investigations held with respect to any such accidents any of the provisions of section three of the Notice of Accidents Act, 1894; (57 & 58 Vict. c. 28).

(c) Prohibiting, pending investigation, access to or interference with aircraft to which an accident has occurred, and authorising any person, so far as may be necessary for the purpose of investigation, to have access to, examine, remove, take measures for the preservation of, or otherwise deal with any such aircraft.

(d) Authorising or requiring the cancellation, suspension, endorsement, or surrender of any licence or certificate granted under this Act, or any order made thereunder where it appears on an investigation that the licence ought to be cancelled, suspended, endorsed, or surrendered, and for the production of any such licence for the purpose of being so dealt with

(3) If any person contravenes or fails to comply with any regulations under this section, he shall be liable on summary conviction to a fine not exceeding fifty pounds or to imprisonment with or without hard labour for a term not exceeding three months.

What is an Owner?

It is also to be noted that in the Bill the word "owner" includes "any person to whom the aircraft is demised" or "any person to whom the aircraft is hired at the time of the offence." That is to say, either the pilot or the hirer may be held responsible for an accident or trespass if the machine is out of the hands of the real owner at the time. And, finally, The new Bill gives the Air Ministry the actual power necessary to institute proceedings against those who break the Law of the Air. All of which is very much to the good, and will not only make flying much safer in the future, but will enhance still further the reputation of British aircraft abroad.

### The Need for Stringency.

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There is no doubt that the whole system of checking the airworthiness of aeroplanes needs tightening all round. This is certainly not due to any lack of keenness or energy on the part of *General Bagnall-Wild or his Aeronautical Inspection Department*, but simply because under the old Act that Department has not the power to make its work as effective as is desirable.

It can refuse an airworthiness certificate when application is made for a new certificate, but it cannot withdraw that certificate when once granted. Also, one believes that it has not as yet the power to insist on such detailed inspection as may seem desirable in some cases of machines which have been in use for a considerable time.

Desirable Publicity.

For example, it should be made clear that the machine was not by any means new.

Also the *date of inspection for its airworthiness certificate by the A.I.D. should be published.*

And *the public should be told whether that inspection included the opening up of the wings and fuselage so that the state of the internal structure could be investigated.*

Furthermore, *the position and technical qualifications of the individuals who vouched for its airworthiness day by day should be stated.*

So much publicity at least is desirable from all points of view. The owner or owners of the machine would, one feels sure, be glad of a public statement to make it clear that they were not to blame. The Avro Co. would certainly wish to have it known that they were not in any way concerned. The makers of the machine, whether now in the Aircraft Industry or not, would be equally glad of full publicity. The A.I.D. would also, one feels sure, like to have it known that they did all that lay in their power to assure its airworthiness.

Enabling Bill.

As may have been gathered, the new Bill concerns exclusively the Department of Civil Aviation. Sir Frederick Sykes, Controller-General of that Department, has laboured strenuously for the good of Civil Aviation ever since hostilities ended, and under the most difficult circumstances. He has had, so to speak, position without



## Notes on "Civil Aviation"

power, an office without officials. He has had to work with words rather than deeds. And yet Jie has done much to establish this undeserving country as the leader of the world in Civil Aviation.

Sir Hugh Trenchard has made the R.A.F. the leading militant power in the air.

One hopes that the new powers conferred on the Air Ministry by this enabling Bill will enable Sir Frederick to place British Civil Aviation in as dominant a position as that occupied by the R.A.F. Then we shall indeed be able to claim the Command of the Air. - C.G. Grey.

### THE AIR MINISTRY EXHIBITS AT OLYMPIA

Of the exhibits which filled the gallery at Olympia, all of them contributed by the Air Ministry, that staged by the Aeronautical Inspection Department illustrative of the tests and measurements made during the process of manufacture of both aeroplanes and aero engines was extremely interesting and instructive.

The first exhibit in this section, actually a contribution from the R.A.E., showed the skeleton of a Sopwith "Camel" inverted upon trestles and with its wings loaded for a strength test.

This is shown in a photograph which illustrates the method of support of the fuselage and the method of loading with quilted bags of lead shot of standardised weight.

The next exhibit showed the measurements made to ensure accuracy of trueing up. In this case the machine was a Bristol "Fighter," blocked up to the trueing-up position, and equipped with plumb bobs, incidence gauges, and the like instruments, and with tapes illustrative of the numerous measurements which compose the routine of erection checking. After these familiar sights there were to be discovered numberless special instruments, gauges and jigs devised for the securing of accuracy in the manufacture of the components of aeroplanes, aero engines and airscrews.

Of the importance and the volume of this checking work in the late war one may judge by the presence among the A.I.D. exhibits of two balances expressly designed for checking the weights and the balance of the cylinders of rotary engines and of the connecting rods of engines generally.

It is fairly obvious that such measurements could be carried out on small quantities of parts by the use of normal weighing appliances of adequate sensitivity. That it should have been worth while to devise and build the complex instruments exhibited shows how great an amount of this work must have been necessary and how thoroughly it was carried out.

Many of the gauges devised for checking the dimensions of engine parts were extremely ingenious. One in particular was designed to secure that an internal and an external key-way in one particular engine component were accurately set at their intended angle one to another.

This gauge consisted of two blocks of steel, each one half of the same cube. Each half was bored to be a snug fit on one end of the component in question. One half in addition was bored right through and into this orifice was fitted a keyed plug which projected into the component and engaged in the internal keyway.

The other half possessed a slot, in section similar to the plan form of the external keyway, through which there passed a long fitted plug to engage in this keyway. With the plug in place and entering the external keyway, provided that the two keyways are properly located, the two halves of the gauge

formed a perfect cube. Any error in location resulted in the two halves of the cube being twisted relatively one to another, and a very small error could be detected by touch at the joint between the two.

If the location were correct the joint could not be felt, but the least twist resulted in a slight break in the surface and the projection of a sharp edge.

Extremely interesting also were certain sectioned blocks of cylinders showing the "innards" of an actual engine in their working positions.

Photographs of two of these—a Hispano-Suiza block of four cylinders, and a Siddeley "Tiger" block of three, are reproduced. These two engines show certain features in common. The cylinder block castings of both are of aluminium, with steel cylinder liners. In the Hispano-Suiza the liner is supported over its whole working length by the aluminium casting into which it is screwed, and the cooling water is in contact with the aluminium alone.

It is known that owing to the different expansion coefficients of the steel liner and the aluminium casting complete contact can only occur at some one temperature, and the sectioned cylinder clearly showed that this temperature was not that of Olympia. It can be seen in one of the photographs of the "Tiger" block that in this case the steel cylinder is screwed only into the head casting, and the aluminium block casting which is bolted thereto forms only the outer wall of the jacket. There is therefore no possibility of an air space intervening between the barrel and the cooling water. In the Hispano-Suiza engine the cams operate directly upon the tabular valve stem heads, and the valve stem is large in diameter to give ample bearing surface to take the side thrust of the cam, and hollow to reduce weight.

In the Siddeley engine the same features are found in the two inlet valves, but since it would be impossible to fit three valves per cylinder, all directly under the centre line of a common camshaft, the exhaust valve is operated through a rocker arm.

Both these examples show the extremely complicated nature of the castings which modern aero engines call for, and give some idea of the difficulties which beset the inspector called upon to determine whether such a casting is correct or not. A further very interesting section was that devoted to airscrews. Here airscrews in all stages, from the rough laminations, through the glued up, the carved, the filled, fabric tipped and polished stages to the final test to bursting on a spinning tower could be seen.

Further, instruments for checking blade shapes and angles, and for testing balance were to be found, together with, samples of all the more common defects to which airscrews are liable.

The application of X-rays to the detection of flaws in the interior of either materials or of finished parts was shown by a number of radiographs. One of these showed the interior economy of a certain box rib, and revealed the fact that a wooden packing block supposed to fit tightly between top and bottom laths of the rib actually failed to touch either with more than line contact, and also that certain tacks had split the wood whereinto they were driven. It would have been impossible to determine otherwise whether or not the block

existed at all, let alone whether it fitted properly, after the rib had been built, and it seems highly probable that in the future this method of peering into the interior of such parts to detect such cases of dishonest work may assume a great importance.

Of instruments for testing and examining materials there were large numbers, practically all of them already known to general engineering practice, but evidencing by their number and variety the very wide range of material which goes to the making of the modern aeroplane. Among the miscellaneous exhibits in this section was one very interesting type of all-steel wing, designed and built by the R.A.I.S. at Farnborough. The photograph gives a very good idea of the form thereof.

The spars are steel boxes, formed out of corrugated strip of thin gauge in what has now become practically a standard method. The rib structure is particularly interesting. It will be seen that the ribs are steel tube girders with wire cross bracing. From the point of view of economy in weight this is probably the best solution of the metal rib yet devised, but it seems highly improbable that, in such small sizes as this (the example is designed for a standard .504 K type Avro) such a structure can be produced at a reasonable cost. One irrepressible humourist described the exhibit as the "R.A.E.'s imitation of God making flies."

At the same time it must be remembered that experimental work is much better commenced on a modest scale, and that demonstration that a satisfactory wing of the type is possible in small sizes is an essential preliminary to embarking on the design of much larger wings, and that for deep wings of great chord this form of rib will probably be fairly cheap to construct.

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Another product of the R.A.E. was the "Fireproof" Avro.

This was the fuselage of an Avro, fitted with an A. B.C. "Wasp" engine, wherein all possible precautions against the spread of fire from the engine, via the carburettor back into the fuselage fuselage and so to the tanks, had been embodied. In the scheme adopted there was nothing of startling novelty, but in the thoroughness with which the scheme was carried out there were many object lessons to the designer of engine installations.

A very complete range of instruments for both the purposes of straightforward navigation and for test flying were on view.

Of these one of the most interesting, and certainly one of the most simple, was the R.A.R. turn indicator. This depends for its operation on the well-known fact that if a spinning gyroscope is forced to change the direction of its axis of rotation in any one direction it immediately attempts to also change the direction of that axis in a plane at right angles to the enforced movement.

The turn indicator is a small diameter flywheel, carried in bearings on a trunnion. The axis of the wheel is set parallel to the line of flight, and the trunnion carrying the bearing is free to turn against a spring round an axis athwart the machine. If the machine turn, and the flywheel with it, the evroscope forces the trunnion to turn in its turn and so rotates an indicating needle on the instrument board. Rotation of the gyroscope is attained by cutting inclined holes through the wheel itself and exposing it freely to the wind, and the whole mechanism is of the simplest possible.

## THE INSTITUTE OF AERONAUTICAL ENGINEERS.

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### July Notices.

Council Meeting.—A meeting of the Council was held on July 12th.

### Elections.—

Honorary Members : Com. Dr. Ginamni ; Col. Milivoye Yoksimovitch.

Member : Charles Baxter, M.I.Mar.E., F.R.Met. S.

Associate Members : Hector Sleemau ; Captain Charles Frobisher, F.R.Met.S. ; F. A. Thomas, A.I.E.I.Mech.E.; Major F. C. Buck; Capt. P. C. C. Passman; Gysbertus Spit.

**Foreign, Colonial and Provincial Branches.** —The Council has appointed a Branches Committee to deal with matters relating to the promotion of branches at home and abroad.

### Employment. —

Every possible assistance is being given to members in finding berths, and members desirous of availing themselves of this should communicate with the Secretary without delay.

### October Examinations.—

Associates and Students who desire to sit for the Intermediate Examination for Associate Membership must make application before August 31st, to the Secretary, from whom copies of the rules of examination are obtainable.

*Pilots may also sit for the Intermediate, and the Final Examination*, qualifying for Membership, will also be held in October.

### Financial Year.—

The Council has decided that the first financial year shall be considered to end on December 31st, shortly after which date their annual report and balance sheet will be presented.

### Monthly Notices.—

Members of the Institute who happen to "be regular readers of the journal in which these notices appear are requested to notify the Secretary accordingly, so that the unnecessary expense of sending out duplicate copies by post may be avoided in future.

### Donations.

The Council gratefully acknowledge the further gift of office furniture from the Nieuport and General Aircraft Co., Ltd., and the gift of a complete set of numbers of *Flight*, commencing with the first issue, from Frederick R. Simms, Esq. 60, Chancery Lane, W.C.2

Douglas Shaw, Secretary.

11 August 1920 : HOUSE OF COMMONS : Q&A - Aug. 11th.—The following written answers were given : —

ROYAL AIR FORCE—AEROPLANES, AIR STATIONS, AND PERSONNEL.

Mr. PURCHASE asked the Secretary of State for Air. the number of aeroplanes that are now being utilised, the number of air stations in England and Wales; and the staffs employed there.

Mr CHURCHILL : The total number of machines being utilised is 5,174. This number makes provision for initial equipment, reserve and wastage. There are 45 air stations, including depots and seaplane stations, in England and Wales, and the personnel employed total 1,389 officers and 16,750 other ranks. : The Aeroplane, pg 394 - 18 August 1920

25 August 1920 : pg 428 : The Aeroplane August 25, 1920 AIR FORCE.  
Official Communiques.

## PURCHASE OF DISCHARGE FROM THE ROYAL AIR FORCE.

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The Air Ministry announced on Aug 19th .

The following rates have been established as those which shall be paid by airmen who are permitted to purchase their discharge from the Royal Air Force :

## Notes on "Civil Aviation"

- (i) Recruits (airmen or boys) with less than three months' service—£20
- (ii) Boys and airmen entered ; ^ boys, who have been or are being trained in the Royal Air Force for a trade in Group I or for a trade in Group II the equivalent of which in civil life would \_ have involved the serving of an apprenticeship —,£100.
- (iii) Boys, and airmen entered as boys, who have been trained or are being trained in the Royal Air Force in a trade in Group II the equivalent of which in civil life would not have involved an apprenticeship — £ ^ 0.
- (iv) Airmen entered as semi-skilled men whose training was continued in the Air Force in any of the trades in either Group I or II- £60
- (v) Airmen (including boys) entered and trained in the Navy, Army or Air Force and subsequently placed in Group A, B, C or D of the R.A.F. Medical Service— ^ 60
- (vi) All other airmen, and airmen serving in Class "E" of the Royal Air Force Reserve —£35.

### The trades in Group II which in civil life would involve an apprenticeship are shown below :

Balloon Basket Maker, Electrician, Machinist, Carpenter, Coach painter, Sheet-Metal Worker, Tinsmith.

The above amounts may be reduced in certain circumstances by authority of the Air Council, provided that such reduction does not exceed 50 per cent, of the total sum payable.

### Applications by Relatives:-

Applications by parents or guardians in respect of boys should be made by letter, giving the fullest possible particulars of the circumstances in which the application is made, addressed to • The Secretary, Air Ministry, Kings-way, London, W.C.2.

Applications submitted by boys on their own behalf will not be considered.

Applications by relatives of serving airmen should be made by letter, giving the fullest information of the circumstances in which the application is made, addressed to the officer commanding the unit in which the airman is serving.

Applications by Reservists—Applications from airmen who are serving in the Reserve should be submitted to the Officer i/c Records, Royal Air Force, Blandford, Dorset.

## " WAKEFIELD " SCHOLARSHIPS FOR R.A.F. CADETS.

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The Air Ministry announced on Aug. 19th : —

Sir Charles Wakefield has generously undertaken to provide funds during the next three years for the award of two scholarships annually, each of a value of .-£75 per annum, which will be tenable at the R.A.F. Cadet College, Cranwell.

This offer, which has been made in order to assist cadets whose parents or guardians are in reduced circumstances, have been gratefully accepted by the Air Council'. The Scholarships will be known as "Wakefield Scholarships."

One scholarship will be offered for competition each year at the examination for admission to the College held in June and one at that held in November. The fir ^ t award will be made in connection with the examination held in November, 192c

The scholarship on each occasion will be awarded to the candidate from amongst those considered eligible by the Air Council who passes highest in the examination. In determining who is eligible the Air Council will give preference to those candidates whose l educed circumstances are due to the late War.

A King's Cadet, a Prize Cadet or a candidate nominated by the Air Council under the Regulations will ifot be considered eligible to hold a "Wakefield" Scholarship.

The Scholarships, which will be tenable for two years, will be paid in advance in equal instalments at the beginning of each of the four terms of residence.

The names of intending candidates should be forwarded to the Secretary (S.7), Air Ministry, Kiugsway, London, W.C.2, from whom any further information required may be obtained. Applications should be received not later than January and May in the case of candidates who propose sitting for the examinations held respectively in the following June and November. Applications should be accompanied by a full statement (which will be treated as strictly confidential) of the circumstances of the candidate's case.

In view of the imminence of the forthcoming examination in November, 19:1, applications to ccmplete for the Scholarship -will be accepted on this occasion only, provided that they reach the Air Ministry not later than Oct. zst, 1920.

Applications to compete for a Scholarship should be sent 'orward independently of the ordinary application for admission to the examination for the purpose of entry to the Royal Air Force Cadet College.

These latter applications should continue to be addressed to the Secretary, Civil Service Commission, Burlington Gardens, London, W.i, and should be forwarded in the manner prescribed and\_ not later than the dates erven in th- *announcement issued by the Civil Service Commissioners* in advance of each examination.

## Notes on "Civil Aviation"

26 August 1920 : H.M.A. R.32 left Flowden at 20.30 on a twenty-four hours' instructional flight. After flying over the East Coast, London was reached at 09.00 the following morning. The airship then returned to her base. The vessel carried the United States crew of the airship R.38.

04 September 1920 : Civil Service Commission : Canada Gazette pg 876 : volume 54, number 10, 4 September 1920, page 28

Civil Service Commission of Canada - POSITIONS VACANT.

Civil Service of Canada - Competition List No. 54 .

The Civil Service Commission of Canada hereby give public notice that applications will be received from persons qualified to fill the following positions in the Civil Service of Canada <sup>154</sup> : -

### **DIRECTOR, TECHNICAL, AIR BOARD (TECHNICAL DIRECTOR)**

Competition # 1438.

A Director, for the Technical Branch , Air Board, at Ottawa, at an initial salary of \$4,1100 per annum, which will be increased upon recommendation for efficient service at the rate of \$300 per annum until a maximum of \$5,100 has been reached .

This initial salary will be supplemented by whatever bonus may be provided by law .

Duties:-

Under direction, to be responsible for the technical work of the Air Board, including:-

1. the operation of the Civil Aircraft and Engine Repair sections,
2. the administration of the technical staff,
3. the designing of shipways, cradles, hangars, petrol tanks and other fixed equipment,
4. the examination and approval of aircraft required to be examined for air worthiness,
5. the approval of modifications in standard types of aircraft and equipment ;
6. the calculation of the strength of materials used in an aircraft manufactures, and
7. the making of recommendations with respect to types of aircraft and equipment proposed to be purchased ; and
8. to perform other related work as required .

Qualifications .-

1. Education equivalent to graduation in engineering from it school of applied science of recognised standing ;
2. 5 years of experience in the design and inspection of aircraft ;
3. it thorough knowledge of standard types of aircraft
4. A high degree of organising and administrative ability.

Examination(Subjects and Weights) as follows :

1. Education, Training and Experience, 4
2. Oral Interview, if necessary in the opinion of the Commission, 1.

### **SUPERINTENDENT AIRCRAFT REPAIR SECTION**

Competition # 1441

A Superintendent for the Aircraft Repair Section <sup>155</sup>, Air Board, at Camp Borden at an initial salary of \$2940 per annum, which will be increased upon recommendation for efficient service at the rate of \$180 per annum until it maximum of \$3,300 Into been reached .

This initial salary will be supplemented by whatever bonus may be provided by law .

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<sup>154</sup> Canada Gazette volume 54, number 10, 4 September 1920, page 28

<sup>155</sup> Canada Gazette : List # 15 advertised in volume 53, number 30, 24 January 1920, page 34, position remained vacant after list 54 olume 54, number 23, 4 December 1920, page 46 and was re-advertised in List # 63 advertised in volume 54, number 16, 16 October 1920, page 10 position remained vacant after list 63 volume 54, number 23, 4 December 1920, page 46. and was re-advertised in List # 71 advertised in volume 54, number 23, 4 December 1920, page 46.

## Notes on "Civil Aviation"

### Duties:-

#### Under direction to

1. lay out and direct the work of overhauling, repairing, assembling and erecting aeroplanes, seaplanes, and flying boats and
2. to direct the work of making aircraft parts from plans and specifications ;
3. to supervise the work of an aircraft repair section whether employed upon construction or repair work ; and
4. to perform other related work as required

### Qualifications:-

1. Education equivalent to high school graduation ;
2. at least ten years of experience as a carpenter or similar woodworking tradesman ;
3. five years of which shall have been in a supervisory capacity ;
4. extended experience in the construction, rigging, and repair of aircraft
5. : ability to handle men .

### Examination (Subjects and Weights) as follows :

1. Education, Training and Experience, 4
2. Oral Interview, if necessary in the opinion of the Commission, 1.

## **SUPERINTENDENT - ENGINE REPAIR SECTION**

### Competition # 1440.

A Superintendent for the Engine Repair Section. Air Board, at Camp Borden on initial salary of \$2940 Per annum, which will be increased upon recommendation for efficient service at the rate of \$180 per annum, until a maximum of \$3,300 has been reached .

This initial salary will be supplemented by whatever bonus may be provided by law .

### Duties:-

#### Under direction to lay out and direct the work of:-

1. Erecting , testing, overhauling, dismantling and rewiring aircraft engines ;
2. to supervise the installation of aircraft engines in machines and
3. oversee such ground tests as are required :
4. to report upon the condition of aircraft engines of standard or new types ; and
5. to perform other related work as required.

### Qualifications:-

1. Education : Graduation in Mechanical Engineering from a school of applied science of recognised standing
2. at least six (6) years of experience in engineering and machine shop work, 2 years of which shall have been in the supervisory capacity.
3. Thorough knowledge of the standard types of aircraft and the organisation and management of an engine repair section
4. Thorough knowledge of metal working including moulding, brazing, silver soldering and electric welding.
5. Ability to handle men

### Examination (Subjects and Weights) as follows :

1. Education, Training and Experience, 4
2. Oral Interview, if necessary in the opinion of the Commission, 1.

## **SENIOR CIVIL SERVICE EXAMINERS**

### Competition # 1441,

Senior Civil Service Examiners at an initial salary of \$1800 per annum which will be increased upon recommendation for efficient service at the rate of \$120 per annum until it maximum of \$2160 has been reached .

This initial salary will be supplemented by whatever bonus may be provided by law.

### Duties:-

#### Under direction to perform work as assigned in

## Notes on "Civil Aviation"

1. the preparation of questions for civil service examinations,
2. the rating of papers,
3. the working out of standards for rating papers,
4. the holding of tests.
5. the advertising of examinations
6. in some cases to direct the work of Junior Civil Service Examiners ;
7. to assist in securing boards of examiners and
8. to perform other related work its required.

### Qualifications.-

1. Education : Equivalent to Graduation from a University of recognised standing
2. Two years of experience in Civil Service examination work in the department of a commercial concern, or in the work of equivalent character and standing
3. Preferably considerable knowledge in the organisation and function of government departments
4. in some cases supervisory ability
5. Tact and good judgement
6. integrity

While a definite age limit has not been set for this competition, age may be determining factor when making selection

### Examination : Subjects and Weights as follows :

1. Education and Experience, 4
2. Practical Questions 3
3. Oral interview 3
4. The second part of the examination will be given only to those who have shown that they possess the minimum qualifications in education and experience

Those successful in the first two parts of the examination will be assembled later at one or more points for oral interview

List of eligibles will be established for vacancies in the above class, but only two vacancies exist at present

### General Directions:

1. Selections for eligible lists of applicants qualified to fill similar vacancies which may occur in future may be made from the applications for those positions.
2. According to law, preference is given to persons who have been on active service overseas on the military or naval forces of His Majesty or any of the Allies of His Majesty during the late war.
3. The Age Limit does not apply to persons who have seen active service overseas, but these candidates must furnish a certified copy of their discharge certificates, or in the case of commissioned officers, a certified statement of their military services
4. Application forms, properly filled in, must be filed in the office of the Civil Service- Service Commission, in the case of competitions 1439 and 1440 not later than September 24, 1920 and in the case of competitions 1438 and 1441 not later than October 4, 1920
5. Application forms may be obtained from the office of the employment service of Canada or from the Secretary of the Civil Service Commission, Ottawa.

By Order of the Commission,  
W. Foran - Secretary  
Ottawa, September 2, 1920

15 September 1920 : The Department of Civil Aviation has begun the publication of a series of notices to civilian ground engineers.



## Notes on "Civil Aviation"

The first instalment of these appears on page 528 of this issue. - Aeronautical Engineering : Supplement to The Aeroplane, September 15th, 1920. pg 515

22 September 1924 - Aviation Weekly - The July 31 report of the R.C.A.F. branch of the National Defense of Canada shows that the civil aviation certificates and licenses in force were as follows.

Private air pilots 7.  
commercial air pilots 54,  
air engineers 226,  
registered aircraft 35,  
air harbour licenses 23.

22 September 1920 : UK - Aeronautical Engineering supplement to the Aeroplane pg 572 : SITUATION VACANT.

DIRECTOR-GENERAL required for the Canadian Air Board, Ottawa, Canada.

Starting salary \$4,300 dollars per annum, rising to maximum of \$5,100 dollars by annual increments of \$300 dollars.

Candidates must have:

education equivalent to graduation in engineering from a school of applied science of recognised standing;

five years of experience in the design and inspection of aircraft;

a thorough knowledge of standard types of aircraft ;

a high degree of organising and administrative ability.

Preference will be given to candidates who have been on active service.

Application forms may be obtained from the Canadian liaison officer, The Air Ministry, London..

Applications must be filed with the Civil Service Commission, Ottawa, not later than October 4th, 1920

29 September 1929 : UK - The Berkshire Aviation Co. tour of the English provinces - Ex-RAF Lieut. J. C. C. Taylor, A.I.Ae.E., who was flying at Southport all last, year, is carrying out the duties of Ground Engineer. Aeronautical Engineering : Supplement to The Aeroplane, September 29th, 1920. pg 598

29 September 1920 : UK : CANADIAN AIR BOARD SPECIFICATIONS FOR

EXPLORATORY AND FOREST PATROL AIRCRAFT.- In an explanatory letter signed by the Secretary of the Air Board, the following statement is made :—

"The Air Board has under consideration the purchase of a number of aeroplanes, seaplanes, and flying boats.

As the war type machines now in possession of the Canadian Government become obsolete, it is the intention of the Air Board to replace them with the most modern commercial machines available.

The attached draft sets forth the requirements which the Technical Officers of the Air Board consider should be embodied in accepted types of aircraft.

"It is the policy of the Air Board to purchase one each of several types of aircraft and, after exhaustive tests in Canada, to standardise the types found to be most suitable and to order in quantities.

" You are therefore invited to tender for aircraft as per attached.

"Delivery of machines will be required on or before March 1st, 1920

The work for which they will be mainly needed will be photographic exploration and forest protection.

The requirements for both types of work will be very similar.

The country over which flights will be made is very rough and uncultivated, with aerodromes few and far between.

Long distances will have to be traversed from the bases, and it is essential that the engine and installation be of the most reliable type possible as a forced landing in a country devoid of roads or railways would mean total loss of the machine unless repairs can be effected on the spot by the crew.

The only months free from ice and snow in the northern parts of Canada are April to November.

If flying is to take place all the year round, all types of aircraft must be able to land on snow and ice, and proper provision must be made for this fact in the design.

One even more difficult problem is introduced by the fact that for a certain period in the spring and the autumn it will be difficult to find either open water for seaplanes to land on or ice sufficiently strong to bear a machine at rest.

A proper consideration of these points should be made in tendering to the specifications.

The Types Required.

The specifications issued call for four distinct types-of aircraft: single-engined flying boats, single-engined aeroplanes, single-engined float seaplanes, and twin-engined aeroplanes.

In certain respects similar requirements are made for all four types.

## Notes on "Civil Aviation"

The hull or fuselage of all types must be: considerably larger than is customary in war-time types, and as free from internal cross-bracing as possible to provide a maximum stowage space.

Seating accommodation for pilot and three passengers is required in all types.

Provision for landing on snow or ice must be made.

Ten hours' petrol capacity at cruising speed is required in each case, and dual control is to be fitted.

The Rolls-Royce Eagle VII modified is specified as the power plant in every case, except in the case of the twin-engine aeroplane, when the choice is open as between "any standard type in production."

Provision is to be made for warming oil leads and water connections for winter flying, and a radiator system should provide for extremes of temperature ranging from 60 deg. below zero to 100 deg. F.

Machines must be so arranged that open types can be converted to cabin type to protect the crew in winter flying.

The largest possible cargo capacity consonant with the other requirements of the specifications is demanded.

A factor of safety of not less than 8 to 1 is required through-out.

The more specific requirements of the particular types are given hereafter.

### 1.—Single-engine Flying Boat.

The hull may be either: "box" or "Linton Hope" construction, of diagonal planking, Consuta, or a combination of both, or of metal construction, designed to stand more wear and tear than those of war-type hulls.

Hulls are to be provided with bulkheads and a drainage system, drained into a well provided with Kingston valve, or a self-baling cockpit.

The hull to be as clear as possible for stowage.

The type will be used extensively on inland waters, and it is suggested that therefore a more efficient planing bottom than those of the war types can be designed.

It is imperative that the boat take off with full load from fresh water at 3,000 ft. above sea level in a distance of 600 yards.

Ailerons and rudder arc to be balanced, the elevator may be so.

Folding wings are desirable.

Petrol is to be fed from tanks in hull to gravity tank in top centre section by rotary pumps.

arrangements for rapidly filling main tanks from a central supply are needed.

Speed all out not less than 100 m.p.h.

Rate of climb relatively unimportant, but first 2,000 ft. must be climbed rapidly.

Ceiling fully loaded 14,000 ft.

Landing speed, as low as possible.

Provision to be made for an aerial camera to operate through an opening in the hull. This opening to be closed by a screwed down deadlight.

### 2. - Single-engined Aeroplane.

Seats for three passengers to be removable to allow space for extra cargo. The undercarriage to be designed to provide great strength to meet rough landings on uneven ground, and must provide for landing on snow and ice.

The petrol system is to provide both pressure and gravity feeds to the carburettor.

Main tank to be between engine and pilot.

Provision for as large a load of cargo as is compatible with the other requirements is necessary.

Speed not less than 120 m.p.h. Rate of climb, ceiling, and landing speed as in single-engine flying boat.

### 3.—SINGLE-ENGINE FLOAT SEAPLANE.

Seating for three passengers and the maximum of free space for cargo in the fuselage is required. Floats of solid construction adequately drained and bulkheaded are called for. They must be arranged so that they do not interfere with the field of view of an aerial camera with 6 in. lens installed in the fuselage. Snow and ice landings must be provided for.

A tail float is optional, but a preference is expressed in the specification for long main floats and no tail float. Ailerons and rudders are to be balanced; the elevator is optional in this respect. Folding wings are desirable.

Petrol system combining gravity and pressure feeds, with rotary pump feed to gravity tank, the latter to be in the wings. Tanks to be rapidly fillable from a central supply.

Speed not less than 100 m.p.h. Climb, ceiling, and landing speed as in previous specifications.

Special stress is laid on the importance of designing for lasting qualities. The substitution of metal for wood, or any other means taken to prolong the life of aircraft and hence reduce depreciation, will be favourably regarded by the Air Board

### 4 - Twin-Engine Aeroplane.

General requirements exactly as in the single-engined machine. Only machines capable of flying in the air with full load and one engine completely cut out will be considered.

## Notes on "Civil Aviation"

Speed not less than 100 m.p.h. Climb, ceiling, and landing speed as before.

[It is very obvious that in the above specifications a very earnest effort has been made to leave the greatest possible scope to individual designers in regard to arrangement and construction. Nevertheless, it is feared that the performances specified will scarcely be reached in any of the single-engined types, as a rough' computation of the weight of power plant, fuel and oil, crew and passengers, called for comes to very nearly 10 lb. per h.p. of the engine specified, without any allowance for the weight of the machine itself, or for any added cargo.

This leaves a very small margin for construction to reach a speed of 120 m.p.h. and a ceiling of 14,000 ft.— C.G. Grey - Aeronautical Engineering : Supplement to The Aeroplane, September 29th, 1920. pg 584.

29 September 1920 : Aeronautical Engineering : Supplement to The Aeroplane, September 29th, 1920. pg 604 SITUATION VACANT - TECHNICAL DIRECTOR required for Canadian Air Board, Ottawa, Canada.

Salary \$4,500 per annum, rising to maximum of \$5,100 by annual increments of \$300.

Candidates must have: education equivalent to graduation in engineering from a school of applied science of recognised standing; five years of experience in the design and inspection of aircraft; a thorough knowledge of standard types of aircraft ; a high degree of organising and administrative ability.

Preference will be given to candidates who have been on active service. Application forms may be obtained from the Canadian liaison officer, The Air Ministry, London, and must be filed with the Civil Service Commission, Ottawa, not later than October 4th, 1920

13 October 1920 : The Aeroplane pg 664 : SITUATIONS VACANT.

1. AERO - RIGGER required immediately for work in a British Colony.
  - Sound knowledge of rigging and handling flying boats and seaplanes essential, preferably Supermarines and Avros;
  - Must be capable of stripping and recovering planes, with a knowledge of hull work.
  - Must qualify for Ground Engineer's certificate.
  - Preference given to ex-R.A.F. men.
  - Position requires energy and keenness for pioneer work.
  - Strict soberness essential.
  - Apply by letter only, stating full record and enclosing references, to Major Cochran- Patrick, 166, Piccadilly, W.i.
2. AERO - SAILMAKER required immediately for work in a British Colony.
  - Sound knowledge of rigging and handling flying boats and seaplanes essential, preferably Supermarines and Avros;
  - Must be capable of stripping and recovering planes, with a knowledge of hull work.
  - Must qualify for Ground Engineer's certificate.
  - Preference given to ex-R.A.F. men.
  - Position requires energy and keenness for pioneer work.
  - Strict soberness essential.
  - Apply by letter only, stating full record and enclosing references, to Major Cochran- Patrick, 166, Piccadilly, W.i.
3. AERO - ENGINE FITTER required immediately for work in a British Colony.
  - Sound knowledge of Beardmore and Clerget engines essential.
  - Sound knowledge of Supervision of workshops essential.
  - Must qualify for Ground Engineer's certificate.
  - Preference given to ex-R.A.F. N.C.Os., especially those who are known to Majors H. Hemming and Cochran-Patrick.
  - Position requires energy and keenness for pioneer work and experience in handling of men.
  - Strict soberness essential.
  - Apply by letter only, stating squadrons and COs. served under, and enclosing references, to Major Cochran-Patrick, 166, Piccadilly, W.i.
4. FOREMAN required immediately for work in a British Colony.
  - Sound knowledge of Beardmore and Clerget engines essential.
  - Sound knowledge of Supervision of workshops essential.
  - Must qualify for Ground Engineer's certificate.
  - Preference given to ex-R.A.F. N.C.Os., especially those who are known to Majors H. Hemming and Cochran-Patrick.
  - Position requires energy and keenness for pioneer work and experience in handling of men.
  - Strict soberness essential.

## Notes on "Civil Aviation"

- Apply by letter only, stating squadrons and COs. served under, and enclosing references, to Major Cochran-Patrick, 166, Piccadilly, W.i.

13 October 1920 : UK : THE PROGRESS OF AVIATION IN CANADA : in the, Dominion up to the spring of this year, we print the Report of the Air Board for the Fiscal Year ending March 31 1920 : The Air Board Act was assented to on the 6th of June, 1919, and by Order in Council dated the 23rd of June (P.C., 1295), the Honourable A. L. Sifton was named as Chairman of the Board, Colonel O. M. Biggar, Judge Advocate General, as Vice-Chairman; the Honourable S. C. Mewburn, Minister of Militia and Defence, as the representative on the Board of the Department of Militia and Defence; the Honourable C. C. Ballantyne, Minister of the Naval Service, as the representative on the Board of the Department of the Naval Service, and Dr. R. M. Coulter, C.M.G., Deputy Postmaster General, Mr. J. A. Wilson, Assistant Deputy Minister, Department of the Naval Service, and Mr. E. S. Busby, Chief Inspector of the Department of Customs and Inland Revenue, as the remaining members of the Board.

The Board was called together immediately, and considered the organisation of a staff. After consultation with the Civil Service Commission, it was decided that the work under the Board should be divided into three branches, having at their heads respectively a Superintendent of Flying Operations, a Superintendent, Certificate Branch, and a Secretary, the proposal being that the Secretary should administer the internal office organisation, that the Superintendent of Flying Operations should control all civil Government flying, and that the Superintendent of the Certificate Branch should conduct that portion of the administration which related to the public and was concerned with the licensing of personnel, aircraft and air harbours. The organisation thus outlined was formally communicated to the Civil Service Commission on July 15th, with a request that provision should at once be made for the appointment of these three officers and a medical officer for the Certificate Branch. No appointments were, however, made until after some time, and the first appointees assumed their duties as follows : On November 3rd, Lt.-Col. I: Stanley Scott, M.C., A.F.C., Superintendent, Certificate Branch; on Nov. 10th, Major A. M. Shook, D.S.O., D.S.C., A.F.C. and Croix de Guerre, Secretary, and Captain F. R. Smith, Medical Officer; and on December 15th, Lt.-Col. Robt. Leckie, D.S.O., D.S.C., D.F.C., Superintendent of Flying Operations

Permanent office accommodation was made available for the Board's staff only on the 24th of December.

### 2. Air Regulations .

The only step which, before the appointment of technical officers, it was possible to take in the direction of regulating and controlling aerial navigation was to prohibit dangerous flying. An Order in Council for this purpose was passed on July 7th (P.C. 1379). The drafting of a complete set of regulations was, however, proceeded with, and was completed in time for their submission to and approval by the Governor

in Council on (he 31st day of December. The Canada Gazette

,  
containing the regulations, was published on the 17th of  
January,

\_ 1920, and at the same time there was ready for  
distribution a book containing not only the regulations, but  
also the forms settled for use under them, the Air Board Act  
and the Convention relating to International Air Navigation  
as drafted by a sub-commission constituted as part of the organisation of the Peace Conference and approved by the  
Supreme Council. This book has already had a wide distribution.

### 3. Preliminary Surveys for Operations.

In November steps were taken to have made a preliminary  
survey with a view to ascertaining what public services could  
more efficiently and, in the broadest sense, more economically  
be performed by air than by existing methods. Canada was,  
for this purpose, divided into four parts, and ex-Royal Air  
Force officers borrowed or temporarily employed for the purpose.  
The survey was completed by the end of the year,  
and on January 2nd these officers assembled at Ottawa and the  
situation was thoroughly canvassed, with the result that it  
was decided that the most favourable fields for the commencement  
of operations were the less thickly settled and less  
thoroughly explored portions of Canada. An interdepartmental  
conference was accordingly held on January 10th. An  
agenda for this conference, including memoranda on the  
probable cost of operating aircraft, and on their use for purposes  
of survey and for fire protection, was distributed, and  
a number of places were named as possible air stations, upon  
the utility of each of which discussion was invited. The  
usefulness of this preliminary conference was reduced by the  
non-participation of some of the departments which it was  
expected would be interested, but special discussions have  
since been carried on with those departments which were  
represented, and some others. Proposals have been formulated  
for operations next summer.

### . 4. Scientific Research.

: Among the duties imposed upon the Board is that of undertaking  
technical research for the development of aeronautics  
and of co-operating for that purpose with other institutions.  
In execution of this duty, discussions took place with the  
Honorary Advisory Council for Scientific and Industrial Research,  
which resulted in the formation under that Council

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of an Associate Air Research Committee, which held its first  
meeting on the 7th of February. Professor A. S. Eve, Professor  
of Physics at McGill University, was selected as Chairman  
of the Committee, and Mr. R. J. Durley, Secretary of the  
Engineering Standards Association, as its Secretary. Other  
members of the Committee are Professor J. C. McLennan,  
Professor of Physics at the University of Toronto, and Mr.  
J. R. Parkin, Lecturer in the Faculty of Applied Science in  
that University. This Committee will work in the closest  
co-operation with the officers of the Air Board, and will coordinate  
aeronautic research throughout Canada.

### 5. Meteorological Development.

The importance of meteorological information to air navigation  
cannot be over-estimated, and arrangements have been

completed with Sir Frederick Stupart looking towards the necessary developments of the meteorological reports, the undertaking of meteorological observations at air stations operated under the Air Board, and the distribution of -meteorological information.

6. Wireless Installations and Navigators' Certificates.

The development of air navigation will involve a considerable extension of wireless communication, and arrangements have been made with the General Superintendent, Government Radio Telegraph Service in the Department of Naval Service, for this purpose. Air pilots who require wireless qualifications will obtain them through that Department, by which will be issued licences for the necessary installations both in aircraft and on the ground. That department has an organisation extending throughout Canada, and duplication of officers is thus avoided. Like arrangements are expected to be made with the Department of Marine and Fisheries for the issue of navigators' certificates to air pilots who desire or need them. The existing organisation under that department extends throughout Canada and undertakes the examination and qualification of marine navigators. As the problems met with in air navigation are very similar to those which present themselves in marine navigation, this arrangement is, expected to be both economical and satisfactory.

7. Aircraft and Equipment.

Negotiations have been entered into looking towards the taking over by the Air Board of the seaplane stations erected during the war by the Department of the Naval Service at Halifax and Sydney, and that portion of Camp Borden which was developed as an aerodrome by the Royal Air Force and acquired by the Department of Militia and Defence after the conclusion of the war. The equipment which will come under the control of the Air Board from these sources has an estimated value of \$170,000. In addition to the aircraft and equipment thus acquired, sixteen machines, of an approximate value of \$100,000, are being received from the Air Ministry by way of replacement of those presented from time to time during the war to the Canadian Forces through the activities of the Overseas Club, and the Imperial Government is also presenting to Canada aircraft and equipment of the value of about \$5,000,000, including

— So aeroplanes, 14 flying boats, 12 airships, 6 kite balloons, with inflating plants and sheds, 300 motor and other vehicles, and a substantial amount of armament, wireless instruments, cameras, and other technical and general stores. A considerable part of this gift has already been shipped, and shipment of the remainder will not be long delayed.

8. Mapping

At the request of the Air Board, the Dominion Geographer has commenced the preparation of aeronautical maps on the system laid down in the Convention relating to International Air Navigation. The process of completing the mapping of Canada on this system will necessarily be a very long one.

9. Canadian Air Force.

The question of the constitution of a Canadian Air Force was an early subject of consideration by the Air Board, and on December 22nd there was adopted, for submission to Privy

## Notes on "Civil Aviation"

Council, a memorandum covering the general lines of the organisation proposed. A final decision on this subject was however, postponed until the general policy with regard to Canada's future sea, land and air forces was determined and it has consequently not been possible to take any further steps in this direction.

The very large number of ex-officers and airmen of the Royal Air Force in Canada are expected enthusiastically to support the proposals if it is found possible to adopt them.

### 10. Aeronautic Intelligence.

The Air Board Act imposes upon the Board a duty "to study the development of aeronautics in Canada and other countries." In the execution of this duty the Air Board has had the advantage of the work done before its constitution by the Intelligence Branch of the Canadian Air Force under the Ministry of Overseas Military Forces of Canada. This Branch, during the two years of its existence in London, had collected material of very "great interest and value, and its papers were, in the course of the demobilisation of the Canadian Expeditionary Force, transferred to the Air Board, which also secured the services of one of the officers chiefly responsible for its administration. The Air Board consequently has available fairly complete sets of drawings of almost all standard British machines, engines and equipment, with specifications for the construction of many of them, and had also an adequate collection of technical publications, reports and documents. The Intelligence Branch of the Canadian Air Force, O.M.F.C., established communication with the chief aircraft manufacturing companies, and this communication has been maintained, with the result that the Air Board secures early information of developments in design and other inventions having an importance from an aeronautical point of view. With this material it is able to deal with the problems which present themselves to commercial and other companies, and which require solution in connection with operations undertaken on behalf of the Government.

31st March, 1920.

[Since the above Report was issued the Canadian Air Board has been reconstituted. The members are now as follows : Chairman, Mr. Guthrie, Minister of Militia; Vice-Chairman, Col. Biggar; Naval representative, Captain Walter Hose, R.C.N. ; Civil Government Operations, Lt.-Col. R. Leckie, D.S.O., D.S.C. ; Commercial "Aviation. Lt.-Col. Scott; Air Force representative, Major-General Gwatkin, Inspector General Canadian Air Force ; Interior Department representative, Dr. Deville, Surveyor-General.—Ed.]

October 1920 : UK : Discussion from the 1920 Air Conference published in Aeronautical Engineering supplement to the aeroplane pg 674 : Air Vice-Marshal Sir E. L. Ellington, K.C.B., C.M.G., C.B.E., Director-General of Supply and Research -

### THE PRESENT POSITION OF AIRCRAFT RESEARCH AND CONTEMPLATED DEVELOPMENTS :

Air Vice-Marshal Sir E. L. Ellington, K.C.B., C.M.G., C.B.E., Director-General of Supply and Research

During the war the impetus was entirely military, the all important factor in research being speed of progress in the development of fighting machines. There was no time to devote to lines of research which did not promise practical results almost immediately in view of the prospective end of the war, with the result that aircraft and engines produced during the war were almost entirely developments of pre-war types. The progress made in armament, navigational instruments and other accessories, with little or no pre-war experience available, was more fundamental.

Such an opportunist policy as the war demanded is, however, quite unsuitable for times of peace.

It is no longer a sound policy to sacrifice everything to immediate results and accept the risks involved in decisions based upon insufficient technical data ; the principles of scientific research must once more be rigidly applied, and progress only sought along a line of advancement upon which each successive stage is thoroughly explored and understood before the next is attempted.

### Present Position and Contemplated Developments.

The main developments now in progress or under contemplation for military and civil aircraft were dealt with under the following heads :—

- (a) Aeroplanes and seaplanes, and engines.
- (b) Airships and kite balloons.
- (c) Navigational instruments and apparatus.
- (d) Accessory developments to increase the comfort, safety, and efficiency of the passengers and crew.

- (a) Aeroplanes and Seaplanes and Engines.

## Notes on "Civil Aviation"

The main requirements for aeroplanes and seaplanes were stated broadly :—

- (i) Reliability; (ii) Controllability; (iii) Capacity to take off or land in a restricted area ; (iv) Performance ; (v) Safety and comfort ; (vi) Cheapness.

(i) Reliability.—

Reliability is largely a question of engine, and more particularly engine accessories, such as magnetos, and petrol, oil and water cooling systems. The new types of engines now being considered were considered under this heading. Apart from normal developments of existing types, these include the steam turbine, the "swash-plate" engine, wherein the crankshaft is replaced by an inclined disc, and the cylinders are parallel to the shaft, and the possible application of the Diesel principle to aircraft engines.

(ii) Controllability.—

This question was reviewed with particular attention to the control of big engined machines, and the problems affecting those with a central engine room.

(iii) Capacity to take off or land in a restricted area.—

This is of the greatest importance in both civil and military machines. The problem is mainly one of wing and propeller design, and particularly the development of a satisfactory variable camber wing. The Fairey variable camber device and the Handley Page wing were referred to in particular, and the latter described as a wing fitted with a false leading edge carried ahead of the true edge with an air space intervening. Reference is also made to the question of landing aircraft on ships.

(iv) Performance.—

In military machines, the need for performance is paramount, and while it is also important for civil machines, considerations of reliability, comfort, etc., must receive greater weight. The development of engines from the point of view of lightness was discussed.

(v) Safety and comfort.—

The steps which are being taken to promote safety and comfort of passengers and crew were dealt with later in the paper.

(vi) Cheapness.—

The importance of cheapness in construction and maintenance is self-evident for civil aircraft, and it is also of the greatest importance for war purposes in that cost is a reflection of time and labour expended. Efforts are being made to produce more durable machines by introducing a wider use of metal construction. Metal propellers are also being developed, and cheaper forms of fuel are being investigated.

(b) Airships and Kite Balloons.

(i) Airships.—The construction of rigid airships in this country is entirely a war development. The first ships built followed closely the established German practice, but there are now under construction two ships embodying new principles of hull construction which have been developed in this country—the R.30 and R.38.

An insight into the most recent German practice has been afforded by the surrender of the L 71 and L.64, the most noticeable features of which are the construction of the gas bags, and the arrangement and reliability of the machinery. In both these directions special research is being undertaken. Considerable success has attended the efforts made to develop a method of anchoring airships in the open by means of mooring masts, thereby obviating the necessity of sheds except for extensive repairs.

The possibility of carrying aeroplanes on airships is also being investigated. Research is being carried out on a variable pitch propeller for airships, and also on methods of recovering the water from the exhaust gases of the engine, which, if lost, means a reduction of weight of ballast, thus necessitating a discharge of gas.

(ii) Kite Balloons.—Though it is not anticipated that kite balloons will be used again for observation as they were in the recent war, captive balloons have a value for meteorological and other special purposes which are being investigated.

(c) Navigational Instruments and Apparatus.

The development of compasses, turn indicators, and other instruments, were discussed, including directional wireless and navigation by astronomical observations. The principal difficulty in navigation at the present time is landing in fog, and the hope was expressed that a solution may be found to the problem of fog dispersal. In the meantime, efforts are being made to mitigate the difficulty by means of landing flares and electric lighting- devices similar to



## Notes on "Civil Aviation"

those now employed for landing by night As fogs are normally confined to a few hundred feet from the ground, devices for landing a machine automatically from a known height are being explored. Two methods for finding the true height of an aeroplane from the ground (or sea in the case of seaplanes) are being investigated ; one by means of sound, and the other by the use of wireless telegraphy. (d) Comfort, Safety and Efficiency of Passengers and Crew.

The most important lines of development under this head are those directed to the prevention of fire and the use of parachutes.

In order to minimise the risk of fire, the separation of the passengers and crew from the engine and petrol tanks by means of bulkheads is being considered, as also are devices for releasing petrol tanks in case of fire. For military machines, improvements in self-sealing tanks to withstand incendiary bullets, and also tanks which offer the least chance of catching fire in a crash, are being investigated. The provision of parachutes is a controversial question.

Against the obvious advantages are to be set the fact that it is only when a machine has got out of control that the call for a parachute descent would arise, and in these circumstances the question of getting clear would be a very difficult one. In all machines, and particularly military ones, the extra weight is a consideration. There is no doubt, however, that the provision of parachutes may be the cause of some lives being saved, and for that reason they are now being fitted in all R.A.F. machines of the small types where possible. [It should be noted that this is the first official statement, that parachutes are to become a standard part of the equipment of the R.A.F.— Ed.]

Two types of parachutes are being developed : one in which the occupant jumps from the machine, and the other in which the parachute is blown open as the machine descends, thus lifting the occupant clear.

An important source of accidents is that due to starting engines by propeller swinging. To meet this, mechanical starters are in existence, but a successful starting apparatus which forms an integral part of the machine and its engine has not yet been tried out. From the point of view of comfort, mention was made of oxygen apparatus, electrically heated clothing, and other improvements of a less important nature.

### The Discussion.

After the Chairman had complimented Air Vice-Marshal Ellington on his paper and had pointed out that the exigencies of time made it necessary to restrict speakers in the discussion to ten minutes each, he called upon *Sir Richard Glazebrook—late of the N.P.E.; now Zaharoff Professor of Aeronautics* to open the discussion.

Whereupon Sir Richard proceeded for the space of some thirty-five minutes to bore the assembled company with a long account of how keenly alive he, the Aeronautical Research Committee, the N.P.E., and various other bodies and persons were to the importance of researches of the type dealt with in the paper and to the necessity of training competent persons to carry on such researches in the future.

In no sense did he contribute to the elucidation of the problems which now confront the art of aviation, and he very effectively prevented several others who could have done so" from speaking at all.

It is high time that a strict training in humility were made a compulsory part in the education of all scientists. Fortunately,, the ribald remark of one auditor that " Men may come and men may go, but Glazebrook goes on for ever," was not strictly accurate, and he eventually gave place to Mr. F. M. Green.

Mr. Green joined issue with Air Marshal Ellington on one or two points. In the matter of the cantilever type wing he objected that there was no actual reduction in the amount of vulnerable bracing—it was merely put where it was invisible.

The cantilever wing might have other advantages — he thought it had—but not this one. One of the vital features of the development of aircraft was the maintenance of a high standard of detail design. Bad detail design would mar a machine based on the soundest aerodynamical principles, but good detail work could pull a basically inferior design through to success.

The war had produced numbers of capable draughtsmen with experience in detail work, and loss of their services would be a severe handicap to the aircraft industry.

The only way of retaining the services of those who remained was for the Air Ministry to give designing firms experimental machines to design and build. Mr. Chorlton, of the engine department of Beardmores, Ltd., said that engine designers were now placed in a difficult position by the lack of precision in the statements made by different authorities as to the requirements for commercial aero engines. These were roughly two schools. One called for reliable engines—heavily built and of low fuel consumption. The other school said that heavy engines could not be tolerated as they reduced the available ' cargo capacity to below the paying limit. It was gathered that what he asked for was ^ a statement from aeroplane builders as to exactly what extra weight per h.p. they were prepared to tolerate as the price of improved reliability. He pointed out that heavy engines could not

## Notes on "Civil Aviation"

possibly make up for their own weight by their improved fuel economy except on long distance journeys, and that airships therefore gave more scope for heavy types—particularly the so-called Diesel.

Incidentally, he objected to the term Diesel; the engine usually known as the Diesel type operated on an English cycle—the Stuart Akroyd—and there was no need to use a German label for it. [Which is as perfectly true as that aniline dyes were a British invention, and that in both that case and the one now in question it required German pertinacity and business sagacity to turn the invention to profitable commercial uses.—Ed.

On the subject of the steam turbine he asked for more light. Steam had many valuable features as an aircraft prime mover, but as the best thermal efficiency attainable in the relatively small turbine units Necessary for aeroplanes was about 15 per cent., as against the 30 per cent, of the internal combustion engine, he failed to understand how Marshal Ellington hoped to achieve reasonable fuel consumption. As to the limiting size of aero engines he did not believe in the limit of 100 h.p. per cylinder.

If aeroplanes called for 5,000 h.p. engines in the next few years, he thought they- could be built as quickly as the aeroplanes were built to take them. As regards supercharging and forced induction there was another use than that of maintaining power at altitudes. The method could be used to give an engine a 25 per cent, excess over normal power for getting oil or surmounting obstacles, and afterwards substituting an inert gas for part of the air, for keeping a high compression and consequently a low fuel consumption during normal flight.

Mr. Calthrop, of the "Guardian Angel" parachute, then discussed the parachute problem.

Unfortunately, owing to large numbers of the audience leaving the chamber, his remarks were practically inaudible.

### May 1920 : Ottawa : Air Board of Canada : Bulletin No. 1

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AIRCRAFT DEPRECIATION AND COSTS - document, at once instructive and amusing, has been issued by the Air Board of Canada as Bulletin No. 1 :—

It is a well-known fact that auditors now accept as an axiom that 111 commercial life as many firms fail through not knowing their cost price as from any oilier single cause. If this is true of ordinary every-day "business life it is going to be very greatly accentuated in commercial aviation. At the present moment it is probably safe to say that of the various firms engaged in the operation of aircraft commercially, not one knows with any degree of certainty their cost.

This item, as everyone is aware, is made up of various factors which might be tabulated as:

cost of operation,  
cost of interest on investment, and  
cost of depreciation.

It is a comparatively simple matter to arrive at an exact total for the first two, but the third is always difficult to determine.

*Experience in operating of aircraft on anything like a large scale dates entirely from the outbreak of war.*

So very little was done in aviation *prior to 1914* that *the knowledge gained of aircraft as a commercial proposition was negligible.*

War experience is, unfortunately, of such a nature as to be of little use when considering the operating of aircraft from a commercial point of view.

The result is that today all aviation companies are more or less in the dark and merely waiting the results of their first year's operations to determine with some degree of certainty the various figures which will go to show them whether or not they have made a loss or a profit.

A typical state of affairs might be mentioned when the writer called upon the managing director of one of England's greatest aircraft concerns for the express purpose of finding out how this company estimated depreciation. The statement given was, "*We have very little idea what our depreciation is, but we are accepting as an arbitrary figure 100 per cent, per annum per machine.*"

Further inquiry amongst the various commercial concerns in England elucidated the fact that each one was as much in the dark as the one quoted. The inference is obvious. These very large concerns are operating, hoping they are making a profit, but totally unable to say definitely that they are.

## Notes on "Civil Aviation"

*The airy way in which the average pilot dismisses the question of costs from his mind may have been well enough during the war when all efforts had to be concentrated upon winning the war irrespective of whether it was won at a price of £8,000,000 per day or £80,000,000, but this state of affairs, of course, cannot continue and business men demand figures, not theories.*

A close study of the question, combined with details gleaned from records kept during four years of aerial warfare, such information as has been gained by conversations with those interested in commercial aviation in England, and the study of figures compiled in the States, has resulted in the following estimate of that major portion of the cost of aerial operations, depreciation.

For purposes of reducing depreciation to a percentage basis this factor has been divided into two portions, A and B.

A.—Constant Depreciation.

B.—Depreciation due to flight.

(i) Crash risk.

(ii) Deterioration.

I will now endeavour to explain these items.

A : -

Constant Depreciation:

Everyone who has been connected with aircraft knows that if an aeroplane or seaplane is placed in a hangar and left there for a period of years, despite reasonable care being taken of it, at the end of a certain period of time the machine will have lost a great portion of its former value.

In the first place the fabric will have become soggy and certain parts of the woodwork will in all probability have warped.

This depreciation would in time entail a very thorough complete overhauling.

A still more serious factor that has to be considered, however, is the fact that *in a period of years, due to obsolescence the machine will have lost practically all of its former value.*

It is reasonably safe to say that the machine of to-day will not be flown in general use four years hence.

Type and kind is constantly in a state of evolution and of this fact one must not lose sight.

This is particularly true at the present time when *practically all machines on the market have been built for war purposes with the lowest possible factor of safety and the greatest possible speed and climb.*

One might instance the case of the various types of training machines on which many of the leaders of this article learned to fly.

It is almost ludicrous to cast one's mind back to even such a recent date as 1915 and think of the:

Maurice Farman Long Horns

Maurice Farman Short Horns,

Graham-White Henriques and the

Henri Farmans,

on which we used to make our earliest efforts.

These machines have long ago become obsolete for all purposes and if any survive to-day their market value is practically nil owing to this factor of obsolescence.

It is difficult to estimate this constant depreciation accurately, but if one accepts a maximum of three years as being the usual period of time during which a war type of machine may be expected to serve a useful purpose, then we get a figure of approximately 3 per cent, per month constant depreciation.

It is emphasised, that this estimate must be taken into account whether the machine is flown or not.

B.

—

Deterioration due to flight.

(i) Crash risk.

(ii) Deterioration.

(i) Crash risk.— Everyone who has had any experience of flying knows of the large crash risk that was incurred during the war in the operating of aircraft. One had only to stand on a busy aerodrome any day when machines were constantly landing or taking off, to see how large this factor is in the percentage of costs. No matter how sidful the pilot accidents will happen even in peace and the resulting expense involved in repairing the aircraft will be considerable.

Difficulty is again experienced in estimating the usual amount of time a machine can in peace be flown without being crashed.

Practically all we have to guide us is the war experience of war pilots. " In this connection one can recall the very considerable publicity given to a young gentleman in the R.F.C. who was heralded by the Illustrated Daily Press as the "Crasher King," having survived no fewer than seventy eight crashes.

## Notes on "Civil Aviation"

History does not relate why he was permitted to continue on his career of vandalism.

One also can recall a very senior officer of the R.N.A.S. whose enthusiasm for flying very greatly over-balanced his skill as a pilot, and whose write-offs in the aggregate must have amounted to a prince's ransom. *Needless to say, there is no place in civil life for this type of pilot*, and, happily, at least one pilot is known to the writer who has completed 1,000 hours flying in France without a single write-off against him.

*Investigation of the subject seems to indicate that among high-class pilots one must look for a complete write-off in aeroplanes every six hundred hours and in seaplanes every five hundred hours.*

This record will probably improve very considerably as war-time machines give place to commercial types, but until the war products are used up it is not considered safe that one should figure any less than one-sixth of one per cent, per flying hour crashes against aeroplanes and one-fifth of one per cent, per flying hour against seaplanes.

It may be explained that the loss in seaplanes is usually greater than in aeroplanes, as slight accidents often result in the seaplane sinking, thus converting a "partial" into a "total" loss.

(ii) Deterioration.

the last factor to be considered is deterioration. Every type of aircraft has a flying life, that is to say, after a machine is erected and flown a time will come when, apart from crashes, it will become unfit for further service. This life must, of course, differ in different types of machines, the life of some being greater as the factor of safety of the machine is higher and landing speed lower, etc.

For other types of machines the life will be shorter. *One type of machine may be instanced which probably has the worst flying record of all, the flying-boat.* In one of the largest seaplane stations in England it has been found from careful records of figures kept *during the war that the life of the hull of large flying-boats was just over seventy hours.* This figure excluded all war risk and simply took care of wear and tear. *In another squadron of the same type of machine the average was 103.*

On the other hand, *we find examples of aeroplanes whose life averaged between 700 and 800 hours, and in one or two instances the known life of an aeroplane has even been as great as 1,000 hours with only very minor repairs.*

*A careful study of all figures available seems to indicate that the average flying life of an aeroplane may be stated to be 700 hours and of a seaplane 400 hours; or, in other words, that the allowance for deterioration should be at the rate of one-seventh of one per cent, per flying hour for aeroplanes and one-quarter of one per cent, per flying hour for seaplanes.*

It now becomes apparent that A and B must be considered separately.

*In the event of an aeroplane being bought and not flown* the only factor that need be considered is constant depreciation, since the machine is not subject to either crash risk or deterioration due to wear and tear.

*In the event of a machine being used during the summer months only and stored during the winter months,* it will be necessary to charge depreciation under different headings.

In other words, during the winter months when machine is stored depreciation should be charged as shown in A.

A.—Constant depreciation—3 per cent, per month.

The two remaining factors to be considered are

B (i) Crash risk and

B (ii) Deterioration.

B (i)—Crash risk. It is obvious that since under B (ii) the aeroplane is to be written off in 700 hours it will be unnecessary to insure it against crash risk beyond that period. It is also obvious that it is unnecessary to insure a machine against crashes right up to its full value if the machine has done, say, 699 hours' flying. B (i) should therefore be estimated on a sliding scale, or, for the purpose of averaging, the figure of one-half of one-sixth—or one-twelfth—per cent, per flying hour may be taken as an equitable basis.

B (ii)—Deterioration. This factor may be considered as stated one-seventh of one per cent, per flying hour. In adding the above figures together we find that on an aeroplane detailed to carry out certain operations lasting six months and entailing 300 hours' flying, the cost of the machine being 10,000 doll., depreciation should be figured as under r

—

B (i)—Crash risk—one-twelfth of one per cent. » per flying hour for 300 hours 2,500 doll.

B (ii)—Deterioration—one-seventh of one per cent, per hour for 300 hours 4,286 doll.

Total depreciation 6,786 doll.

If the machine is stored in a hangar for the balance of the year we will get the additional cost of :—

## Notes on "Civil Aviation"

A.—Constant depreciation—3 per cent, per month on 10,000 doll, for six months 1,800 doll.

In other words, the total allowance which should be made in calculating cost of operations or insurance and depreciation upon a new machine valued at 10,000 doll and used for operations for a period of six months, during which it was flown 300 hours, would be 6,786 doll., or sixty-seven and four-fifths per cent, of the value of the machine. It is particularly emphasised that the above calculations are based on war-type machines and with war-time experience.

These figures .will unquestionably be greatly modified as the present types of machines give place to those designed for commercial uses and as the attitude of mind created by war experience is altered under peace-time conditions.

The reader of these figures will naturally be inclined to doubt them ; certainly this figure is very large, but experience goes to prove that it is at least approximately correct.

The business man unfamiliar with the use of aircraft will immediately state that depreciation is so large as to rule out aircraft entirely as a feasible mode of transport. This I do not believe to be the case, but the estimating of the cost of operations in various parts of Canada has made it clear that if aircraft has to be used economically, every machine must be flown to its maximum capabilities. In other words, machines must not be allowed to "eat their heads off."

For example, in figuring up the cost of operations of six aeroplanes flying in all 120,000 miles, it has been found that the figure for depreciation was as low as 16.6 cents per mile out of a total of 62.7 cents per mile. In another instance, where only 50,000 miles of flying was required, the depreciation amounted to 96 cents out of a total of 2.04 doll, per mile.

Various other examples go to show that the more flying that is done the more reasonable both depreciation and operation costs become.

During the war no attempt was made to build a machine in such a way that this figure would be reduced.

The life of an aeroplane on active service was exceedingly short, whether it came to its end by crash risk, by deterioration, or at the hands of the enemy ; few machines on active service lasted much over 100 hours, hence a machine designed to stand 1,000 hours' work was merely a waste of energy.

Now that the war is over, however, and aircraft manufacturers are turning their attention to the commercial use of aircraft, serious efforts are being made to design and build machines!

That will last for upwards of 1,000 hours. Prominent in this direction is the advent of the all-metal machine.

Already very satisfactory wings have been made which, while increasing the weight only 10 per cent, over the present methods of construction, give a factor of safety of 12 instead of 6. In England to-day the largest machine ever constructed is being built of metal, and it is hoped that in this and subsequent types the life will be very much lengthened. Unquestionably this is the greatest problem facing aircraft manufacturers to-day and one that will retard the commercial use of aviation until it has been satisfactorily solved.—Ottawa, May, 1920.

### A Criticism.

The foregoing document is of very considerable interest. It is probably true to say that were the writer to resume his inquiries in England to-day he would be able to discover those who possessed very considerably more in the way of accurate information as to the depreciation of aircraft on commercial services than was available at the time his original inquiries were made. Whether he would be able to extract that information in any very useful form and, still further, whether he would be permitted to publish it, is a quite other matter.

But there are certain points whereon remark may usefully be made as to his statements, and very possibly the writer himself would now amend his views in certain respects.

On one issue a very distinct objection may be taken to his assessment of costs. This relates to the question of obsolescence. Financially, the scrapping of an obsolete type of machine is justifiable only when the substitution of a more efficient type will result in economies or in increases of revenue sufficient to pay interest on the capital represented by both the original and the new types of machines.

The sale value of an aeroplane—regarded purely as a commodity— will undoubtedly drop with its age, quite apart from any question of its material deterioration. But as part of the equipment of an aerial transport concern its value is properly what is generally known as a going concern value, and is entirely a function of its revenue earning capacity. This capacity may fall through material deterioration of the machine itself—but is then due to faulty upkeep—or it may fall through the competition of other concerns operating on the same or equivalent routes and employing more efficient types of machine. But if an aeroplane to-day can carry a given load over a given route at a given cost, there is no

## Notes on "Civil Aviation"

factor due to the age alone of that machine that will prevent it from carrying the same load over the same route at the same cost ten or twenty years hence.

To charge obsolescence as a cost is to burden the present with the cost of problematical future improvements, and in the development of commercial aerial transport represents an entirely wrong and shortsighted financial policy. To build up out of any profits available a reserve fund to facilitate the substitution for old type machines of newer and more efficient types is an entirely different affair, but to treat this item as a cost is merely to introduce, one more deterrent to the growth of the business, and hence probably effectively to remove any excuse for so replacing them.

For the remainder of the contents it may fairly safely be said that the figures given for the life of commercial aircraft are all distinctly conservative. Quite possibly the depreciations which result may approach fairly closely to the allowances necessary with existing types of aircraft operating on irregular services over bad country, but British experience of machines operating over regular routes and subject to proper arrangements for maintenance and overhaul would seem to indicate an average flying life of very much more than the 600 hours assumed by the writer. Given competent piloting over routes not worse than the London-Paris as regards facilities for landing, and modern engines properly maintained, it seems probable that at least 2,000 flying hours without a serious crash can be counted on with fair certainty—w. h. S. pg 678-680 Aeronautical Engineering (Supplement to The Aeroplane.) Aeronautical Engineering October 20, 1920

November 1920 : NEWFOUNDLAND : Seal Hunting by Airship.

Four airships:

three S.S. "Zeros" (1-75 h.p. Rolls-Royce "Hawk") and

one S.S. "Twin" (2-73 h.p. Rolls-Royce "Hawks"),

presented to the Newfoundland Government by the Air Ministry, left the Thames on Oct. 29th en route for Newfoundland onboard the S.S. Alconda.

*These four ships, with all necessary equipment and ample spares, will form the nucleus of a regular Government air patrol service, and after an experiment in seal hunting they will be used as a matter of routine in survey work and forest patrol.*

In all probability, two airships will be employed in the seal locating test, which will be made early next year. In order to intercept the herds of young seals that, immediately after the breeding season, drift down on the ice, the airships will fly over the North Atlantic and, by means of wireless, communicate the exact positions of the various herds to the sealing fleet. - Mr. F. J. Tippen, consulting airship engineer and constructor to the Newfoundland Government, in charge of the expedition. - pg 802 The Aeroplane November 17, 1920.

24 November 1920 : The Aeroplane pg 824 : AIRWORTHINESS CERTIFICATES

The following letter has been received : —

Sir—*At the recent Air Conference* I referred to the fact that airworthiness certificates issued by the Air Ministry could not be relied upon by insurance companies when writing aircraft risks and, *in consequence, machines offered for insurance had to be re-surveyed by their experts before the risk was accepted.*

*This statement has been received by certain departments of the Air Ministry with an amount of ill-feeling although I anticipated that they would welcome a criticism* which might be the means of bringing these departments into closer touch with each other, *with a view to improving the situation and ensuring a higher degree of safety in civilian machines, the present system of issuing airworthiness certificates appears to be very unsatisfactory* and would probably lead to disaster if outside influence was not brought to bear in securing greater airworthiness of machines, namely, by the survey carried out by insurance companies' experts.

It appears that, *although a machine may be considered defective in design by Government inspectors "who are deputed by the Inspection Department to finally inspect the machine for workmanship and material"*, that Department has no authority to refuse the issue of an airworthiness certificate.

The result is that, *in carrying out surveys for the insurance companies which I act for, I have been compelled to recommend the Non-Insurance of a number of machines until, some cases, considerable alterations have been made*, although the owner is in possession of a so-called airworthiness certificate.

*In the case of sales of surplus Government machines the machines are not inspected by Air Ministry inspectors, although the C.G.C.A. issues to the purchaser an airworthiness certificate with each machine.*

## Notes on "Civil Aviation"

*This system of issuing airworthiness certificates is a danger to the public, and immediate action should be taken to ensure that all machines are properly inspected and approved, as a whole by qualified engineers not war-time productions prior to certificates being issued, and that the expense of such expert inspection be borne by the owner of the aircraft and not, as is now the case, by the taxpayer.*

*Another important point, which, in the interest of the flying public, must receive attention, is the question of ensuring that machines are maintained in an airworthy condition after the issue of the airworthiness certificate.*

*Under present arrangements a machine is supposed to receive an inspection by a ground engineer before each flight. This is satisfactory, so far as it goes, but the weak link in the chain is the position of the man who carries out this inspection.*

*He certainly holds an A.M. (Air Ministry) certificate, but, at the same time, is the servant of the aircraft owner and is, in consequence, liable to dismissal should he make himself too aggressive in his demands for renewals or repairs. His position is therefore invidious and lacking in authority.*

*The future of civil aviation depends to a large degree upon the safety and reliability of machines, and until something is done to ensure this end the present half-hearted confidence of the public will continue, and insurance premiums will still figure heavily in running charges.*

(Signed) William Glass, A.M.I.Ae.E., A.M.L.A. E., Consulting Engineer to Insurance Companies, 43, Leicester Square, London, W.C.2.

24 November 1920 : The Aeroplane pg 826 - Eng Supl. : The Technical Publishing Co., Ltd., of 1, Gough Square, K.C.4, have sent for review a portly volume entitled "The Motor, Marine and Aircraft Red Book, 1920," contains the names of many prominent people concerned with aviation, though it omits quite a number of important firms, but it also includes many firms whose connection with aircraft has either ceased or is extremely remote.

The list of "Aero Passenger Services" includes several names unknown to the Aircraft Industry, and omits :  
Aircraft Transport and Travel, Ltd.,  
the Instone Air Line and  
Handley Page Transport, Ltd.

So far as one can discover by a somewhat rapid perusal, this "Directory" has not discovered the existence of any aircraft firms in the British Dominions Overseas, and it is a little interesting to note that according to the compiler, *Canada as a British Dominion does not exist. the book is not merely worthless, but a trifle worse.*

In view of the dearness of printing and the scarcity of paper it seems rather a pity to have produced the book.

The Curtiss Company Change of Ownership.

The Willys-Overland Corporation has, sold control of the Curtiss Aeroplane and Motor Corporation to C. M. Keys, who has been elected president of the Curtiss Company. - The reorganisation also involves some changes in the list of officers and directors of the company. F H. Russell has been named vice-president in place of Mr. Keys, the new president. J. E. Keppeily and W. B. Stratton resigned as vice-presidents and directors, and J. Harbeck and W. P. Chrysler resigned from the board. C. R. Keys and Nj. A. W. Smith have been named to fill the resulting vacancies.

The Curtiss Aeroplane and Motor Corporation was incorporated in 1916 and took over the business founder! by Glenn H> Curtiss. Control of the new company rested with the Willys-Overland Co. The Curtiss Company early in 1916 took over the Burgess Company of Marblehead, Mass., and controls the Curtiss Aeroplane Company, the Curtiss Exhibition Company and Atlantic Coast Aeronautical Station. In November, 1917, a new plant, which was built at Buffalo, began operation. It cost approximately 4,000,000 dollars. This plant was eventually sold to the Government. In September of last year a Bill was introduced in Congress to pay the Curtiss Corporation 6,114,126 dollars in settlement of war contracts and for the purchase of the Buffalo plant. The present plants of the corporation are at Buffalo and Garden City.

The authorised capital consists of 303,000 shares of common stock of no par value, and 6,000,000 dollars 7 per cent, cumulative preferred stock of 100 dollars par value. Outstanding common stock amounts to 218,060 shares and the preferred outstanding amounts to 5,463,100 dollars. The company has no funded debt. All of the common and preferred shares are held in a five year voting trust, expiring Jan. 14th, 1921. In the balance sheet of Dec. 31st of last year the plant is valued at 6,645,248 dollars and the goodwill at 2,297,280 dollars. Inventory at that time amounted to 2,883,818 dollars. Gross sales in 1919 were 11,805,808 dollars, and the surplus for the year before deduction of Federal taxes, was 1,939,970 dollars.



## Notes on "Civil Aviation"

### A Matter for 55.

*An ex-officer of the R.A.F., now in Canada*, writes that he has been reading with interest of the Air Ministry Competition at Martlesham, his interest being increased by the fact that Mr. Keep, the pilot of the Westland Limousine which did so well in the "small aeroplane" class, was a brother officer of his in the famous 55 Squadron, R.A.F., and won his M.C. while in that squadron. Incidentally, members of 55 may be interested to know that the squadron has recently been with "C" Force in the Middle East fighting against the Turks.

Furthermore, members and friends of the squadron are reminded that there are still a few copies of the "Chronicles of 55 Squadron" to be had at the price of ins. 6d. These can be supplied by return of post from The Akropwne, i? <., Piccadilly, W.i.

pg 833 - NEW COMPANY.

H. G. Hawker Engineering Co., Btd. (171,409).—Private company Registered Nov. 1,5th. Capital, ,£20,000 in £1 shares.

**To acquire from F. I. Bennett all the patents, rights, etc., relating to** the manufacture of motor bicycles, and to carry on the business of manufacturers of and dealers in cycles of all kinds, internal combustion and steam engines, motor cars, aircraft, etc.

The first directors are :

F. I. Bennett, 10, Cadogan Road, Surbiton, engineer;

H. G. Hawker, "Ennadale," Hook Road, Surbiton, aeroplane pilot;

T. O. Tvl. Sopwith, Horsley Towers, Surrey, engineer;

F. Sigrist, Torrington House, Wolsey Road, East Molesey, engineer;

V. W. Eyre, Honeyhinger, Hindhead, Surrey, engineer.

Qualification £500. sec , : -p. I. Bennett. Registered office : Canbury Park Road, Kingston-on-Thames.

01 December 1920 : Aeronautical Engineering Supplement to the Aeroplane :

THE IDEAL CHRISTMAS PRESENT FOR The Service or Civilian Aviator, The Technical Officer, The Ground Engineer, The Air Line Manager, The Aeroplane Designer and The Aero Engine Designer, or anybody interested in Aviation is "ALL THE WORLD'S AIRCRAFT OF 1920" - NOW READY.

All the Aeroplanes, Seaplanes, Flying Boats, Airships and Aero Engines produced since the 1919 issue in all countries are illustrated with photographs and/or scale drawings and full specifications are given. The Air Forces of All Nations are described and in most cases photographs of the Personnel and Materiel are shown. Price £2 2s. Net. From THE AEROPLANE & GENERAL PUBLISHING Co., Ltd., 61, Carey Street, W.C.2.

15 December 1920 : UK - Licences to Ground Engineers.— New, 133 Total, 478 Renewals, April 1st to Sept. 30th, 1920, 90. (This is quite satisfactory.)

06 May 1920 : FLIGHT : THE TRAINING OF R.A.F. BOYS

THE Air Ministry scheme for the entry and training of boys for the Royal Air Force is now in active operation

One examination for entry took place (under provisional regulations) in December.

future examinations will be carried out under revised regulations which have now been issued as a booklet.

The basis of the scheme for securing a suitable class of boy for training lies in close co-operation between the Royal Air Force and the local education authorities throughout the country.

It is hoped that these authorities will be prepared to nominate boys, after careful selection, to sit for the entrance examination.

Each authority may, for the present, nominate as many boys as it desires. Full information as to the scheme is being sent to the local educational authorities, and those who desire nomination are requested to apply direct to them for information.

Examinations will take place twice yearly

candidates for entry must be between the ages of 15 and 16 1/2 years.

A limited number of candidates having special claims by reason of parental service in the R.A.F. will be entered on the nomination of the Air Council provided the qualifying standard in the entrance examination is reached.

The entrance examination will occupy a single day, and the curriculum includes

mathematics and

experimental science,

English,

history,

geography and



## Notes on "Civil Aviation"

common-knowledge subjects.

Successful candidates will be attested for ten years' Regular service and two years on the Reserve.

They will receive:

1. *three years' apprenticeship training in a trade* and
2. a course of education in
  1. English,
  2. civics,
  3. practical mathematics,
  4. applied mechanics,
  5. mechanical drawing and
  6. general science.

During the period of training the boy's health and general welfare are given careful and continuous supervision.

At the end of three years qualified boys [having passed their educational and guilds exams] are promoted to leading aircraftmen, and *a certain number of exceptional promise* will be *selected for an advanced course [in what?]*. Those who qualify *at the conclusion of this latter course* will be promoted to the rank of corporal, while some may be offered cadetships to commissioned rank

06 May 1920 : FLIGHT : FUTURE OF THE AERONAUTICAL RESEARCH COMMITTEE

THE Secretary of the Air Ministry communicates the following information as to future arrangements for:

Aeronautical research and

Aeronautical education.

The whole question was considered by the Committee under the chairmanship of Sir Richard Glazebrook, K.C.B., F.R.S., appointed by the late Secretary of State for Air, Lord Weir of Eastwood [previously published]

The Committee recommend, inter alia, that

the present Advisory Committee on Aeronautics should be replaced by an Aeronautical Research Committee in connection with the Air Ministry, performing functions different from those of the Advisory Committee, including certain executive functions, and that a Department of Aeronautics should be established at the Imperial College of Science under the directorship of the Zaharoff Professor of Aviation for the provision of advanced instruction in aeronautics.

The British Aeronautical Research Committee has now been constituted with the following terms of reference :—

To advise on scientific and technical problems relating to the construction and navigation of aircraft.

To undertake and supervise such research or experimental work as is proposed to the Committee by the Air Ministry, and to invite any research work which the Committee considers to be advisable ; to carry out such work itself or to recommend by whom the work should be carried out;

To take over complete responsibility for the Air Inventions Committee and for the Accidents Committee.

To promote education in aeronautics by co-operating with the Governors of the Imperial College ;

To assist the aeronautical industry of the country by scientific advice and research, and to co-operate with any research association that may be established ;

To prepare for the approval of the Air Council a scheme of work and estimate of expenditure for the year, and to administer the funds placed at its disposal by the Air Council.

To make reports from time to time to the Air Council.

The members of the Aeronautical Research Committee are as follows :

Chairman: Professor Sir Richard T. Glazebrook, K.C.B., F R.S., physicist, holding seats of authority:

University of London,

Chair of the Zaharoff Professorship of Aviation, Imperial College, London

Director of Aviation - Imperial College of Science and Technology, London

Representing the Air Ministry departments of:

Civil Aviation:

Wing-Commander W. D. Beatty, C.B.E., A.F.C. -,

Lieut.-Col. E. Gold, D.S.O., F.R.S - Meteorology

Supply and Research:

Air-Commodore H. R. M. Brooke-Popham, C.B., CM.G., D.S.O., A.F.C., Director of Research,

Wing- Commander T. R. Cave-Brown-Cave, C.B.E. [Airships]

Representing the Imperial College of Science and Technology,

Professor Sir Richard Glazebrook, K.C.B., F R.S.,

Professor L. Bairstow, C.B.E., F.R.S., Professor of Aerodynamics;

## Notes on "Civil Aviation"

Representing the Department of Scientific and Industrial Research;

Professor Sir J. E. Petavel, K.B.E., D.Sc, F.R.S., Director, National Physical Laboratory,

Representing the Royal Aeronautical Society;

Mr. Alec Ogilvie, C.B.E.,

representing the Society of British Aircraft Constructors.

Mr H. White Smith, C.B.E., and

Mr. J. D. Siddeley, C.B.E.

Scientific representatives :

Professor Horace Lamb, M.A., D.Sc., F.R.S., Professor of Mathematics in the University of Manchester ;

Professor W. E. Dalby, M.A., D.Sc., F.R.S., Professor of Engineering in the City and Guilds Engineering College, Imperial College of Science and Technology ;

Professor B. M. Jones, M.A., Francis Mond., Professor of Aeronautical Engineering in the University of Cambridge;

Mr. G. I. Taylor, M.A., F.R.S., Lecturer in Mathematics, Trinity College, Cambridge ;

Mr. H. T. Tizard, M.A., Lecturer in Natural Science, Oriel College, Oxford ;

with Mr. J. L. Naylor, National Physical Laboratory, as Secretary, ~and

Mr. J. G. Gibson, Air Ministry, as Assistant Secretary.

Sub-committees of the main Committee will be appointed for

Accidents,

Air Inventions,

Aerodynamics,

Engines,

Meteorology, and

Navigation,

with further sub-committees as required.

The sub-committees will consist both of members of the main Committee and of other members.

Approval has been given for the provision of a grant from public funds, as recommended in the report of the above mentioned Committee, towards the cost of the Department of Aeronautics at the Imperial College of Science, and the organisation and staffing of that Department under the direction of Sir Richard Glazebrook as Zaharoff Professor of Aviation, is proceeding.

The respective responsibilities of the Air Ministry and the Department of Scientific and Industrial Research in respect of aeronautical research have been defined as follows :—

(a) The Department of Scientific and Industrial Research to be responsible for:

(b) provision for independent research for the advancement of science [even though it may ultimately tend to the advancement of aeronautics].

(b) The Air Ministry to be responsible for research, aiming exclusively at the advancement of aeronautics, except as regards:

1. work done at the National Physical Laboratory or by

2. an Aircraft Industry Research Association, if and when established with the approval of the Department of Scientific and Industrial Research.

(e) Pending the establishment of permanent machinery for general co-ordination of Government research, liaison between the two Departments at the initiation and during the progress of research to be secured by:

1. confidence, and by

2. mutual representation

on the Air Ministry Aeronautical Research Committee and the Research Association for the Aircraft Industry, if and when established with the approval of the Department of Scientific and Industrial Research

10 June 1920 : FLIGHT : formation of the Air League of the British Empire [ Gen. Seely, the President of the League] on Tuesday last, the Air League,

British which has grown out of the Aerial Empire League, is destined to play "that part and to play it worthily. The main objects to be held in view are, firstly, to educate public opinion upon the supreme importance to the Empire of air power, and to focus upon aviation, both Service and Civil, the attention

of every citizen of the United Kingdom and the Dominions overseas: in a word, to carry out that propaganda among the people without which there cannot be created the essential volume of determined public opinion without which Governments cannot be moved to do things.

In its statement of aims the League very truly observes that during the War the progress of aviation was governed by naval and military demands, and the Air Force now is a factor, and will certainly become the decisive factor, of Imperial defence. It is essential, therefore, that our air power shall be developed and organised, so that it may play its part in conjunction with the Navy and the Army. Aviation is still in almost an embryo stage, and it is essential that private enterprise should receive some measure of assistance from the State in order that new types, new methods, and greater speed, economy, efficiency and safety may result, leading to improved communications between the Mother Country and the Dominions, and the creation of a great reserve of material, experience, and personnel upon which the fighting Air Service can immediately draw in time of crisis. With these premises in view, the League has as another object to support, whatever Government may be in power, in an endeavour to maintain the lead in the air, and will strengthen its hands by placing behind it a great body of well-informed and intelligent public opinion

determined that the Empire shall not lose the safety which our incomparable Navy has hitherto assured

- to us.

Another object of the League, with which we are in the fullest accord, is to press for a complete separation of the Air Service from any species of control by the War Office, and to reinstate the Air Ministry as a Department of State, with its own Secretary of State, Council and Service. At the same time, it advocates the creation of a liaison body to ensure co-ordination between all three of the Services.

These, briefly, are the principal objects with which the League has been formed, and we venture to think they are such as will commend themselves to every intelligent citizen who has given the question of air power and the future of aerial navigation more than a moment's passing thought. The League sets out, under the happiest auspices. Among those who are

associated with it in one form or another are many who have been very intimately concerned with the building-up of aerial supremacy as we knew it at the end of the War. It has a very strong executive committee, and its\_ aims are right. Much, of course depends upon the manner in which the latter are pursued, and upon how its policy is translated into action. We feel assured, however, that there will be no lack of driving-power, and that the new League is destined to become a very powerful factor in the education of the public in the need that exists for keeping our Air Force up to a pitch of efficiency and strength commensurate with the needs of Imperial defence. It has every element in its constitution making for success, and we sincerely wish it well. [...] aeronautical engineering is finding a place

in the curricula of the public schools and of those other Universities which attach more importance to the applied sciences than to the classics. Whether Cambridge, which years ago instituted engineering studies as a part of the University course, has come into line with modern ideas and taken in aeronautics we do not know at the moment. But even if it has not already been done, it will have to come, and what could be better than that advantage should be taken of the presence of men who have had long experience of war flying to inaugurate a practical course of studies ? The chance will never occur again, once these war-wise flyers have departed from the Universities. Doubtless the authorities hold that the manner of their governance of the Universities is no business of the outsider, but in such a case of total prohibition of participation in a method of transport which will in the future be vital to civilisation, some clearer definition of the why and wherefore than has been given should certainly be forthcoming. The matter is not altogether a private one. On the contrary, it seems to be one of national importance, and concerns many more than the dons themselves and the undergraduates to whom their prohibition most directly applies. We quite appreciate that if flying were allowed it would have to be under very stringent regulations, but it should not pass the wit of the authorities to frame such rules as would make for safety and prevent abuses.

## THE INSTITUTE OF AERONAUTICAL ENGINEERS NOTICES

Council Meeting.—A meeting of the Council was held on June 1.

Appointment of Vice-President.—

Lt.-Col. J. T. C. Moore-Brabazon, M.C., M.P., M.I.Ae.E. (Hons.), has accepted the Council's invitation to become a Vice-President of the Institute.

Elections.—Honorary Member : Lt.-Col. J. B. Casqueiro, C.M.G. ; Member ; A. E. Parnacott, M.I.A.E., F.R.S.A. ; Associate Members: Major W. T. Blake, T. B. Ringwood, D. A. Jones, A.M.I.A.E., F.R.S.A., W. H. Sheahan, A. T. Cross, A.I.Ae.E.

Lectures.—The Council would like to receive proposals for lectures by members. A general outline of the proposed lectures should reach the Secretary before August 1 next, but, where possible three copies of the complete lectures should be sent before that date. Out-of-pocket expenses incurred by members delivering lectures are borne by the Institute.

October Examinations.—Members and prospective members are reminded that the latest date for entry for the October Examinations is August 31. Sub-Committees.—The following sub-committees of the Council have been formed : Accommodation Committee (to transact preliminaries in connection with selection of permanent headquarters), L. Howard-Flanders, Esq., H. B. Molesworth, Esq., F. G. Moore, Esq., and the Secretary.

Emergency Committee (to deal with matters of urgency in the absence of Council), L. Howard-Flanders, Esq., H. P. Folland, Esq., H. B. Molesworth, Esq., F. G. Moore, Esq., W. Glass, Esq., and the Secretary.

Donations received for Mrs. Lyne.—Previously acknowledged £15 6s. 6d. ; Professor Bryan, £1 is. ; W. O. Manning, Esq., £1 is. ; Frederick R. Simms, Esq., £1 is. ; S. J. V. Fill, Esq., 10s. 6d. ; Anonymous, 10s. 6d. ; T. C. Letcher, Esq., 10s. 6d. ; Group Capt. Longmore, D.S.O., £1 ; F. S. Wilkins, Esq., 10s. 6d. ; R. Rhodes, Esq., £1 is. ; Lord Foley, £2 2s. ; J. Sowrey, Esq., 10s. 6d. ; Anonymous, £1 ; Colonel Belaiew, C.B., £1 is. Total £27 6s. The Subscription List is now closed and cheques have been sent to Mrs. Lyne, who desires to express her deep gratitude to members of the Institute for their timely assistance.

DOUGLAS SHAW,

Secretary.

60, Chancery Lane, London, W.C. 2.'

## THE CANADIAN AIR FORCE

SOME little time ago we gave the broad outline of the Air Force which is being organised, and below we give some further details sent out by the Canadian Air Board.

The Government has decided upon the immediate organisation of a Canadian Air Force from among the ex-officers and airmen of the Royal Air Force resident in Canada. The Force

will be a militia, not a permanent force. Almost the whole personnel will be non-professional, and the professional personnel will be negligible in number.

The total authorised strength will probably be in the neighbourhood of 5,000. Commissions will be given to officers, and airmen will be enlisted in the usual way. It is proposed that training should be carried on at training centres which the personnel will attend, not by units, but as individuals, the training centres remaining in operation throughout the year, and individuals attending as may be arranged or directed during one month in every twenty-four, being on leave without pay at all other times. They will receive pay while on duty, and their travelling expenses to and from the training centres will be paid. .

It is considered important that the training should not only provide efficient junior officers and airmen, but that it should be as such to furnish a supply of senior officers "Qualified to take command" of larger formations in emergencies" and an opportunity will consequently be afforded to senior officers to take command of training centres for periods longer than one month, but probably not in any case exceeding six months. The undertaking of duty for such extended periods will not be compulsory. It is hoped that the same plan may be applied to the duties to be performed at Canadian Air Force Headquarters, and that a succession of officers will be found from time to time able to assume duties at Ottawa in connection, "with the administration of the Force as a whole". the training stations will be few in number. At first it may not be possible to establish more than one, but at least a second will doubtless have shortly to be added, and plans for this purpose are under consideration.

The local administration of the Force will be carried on by provincial executive committees acting without remuneration, but receiving a grant towards the expenses of maintaining an office and the payment of a secretary. Four members of the committee shall, after the first year, be elected by the officers on the active list of the Force in the province, the remaining three being nominated by the lieutenant-governor of the province, who will act as honorary president of the branch in his province. It is proposed that the active list should include only officers of such an age that they can be expected to render useful air service in war, and retirement from the active list will be compulsory for junior officers at or about the age of 30, and for the most senior officers at or about the age of 38. Further details can be obtained by those interested from the Secretary, Air Board, Ottawa.

# THE ROYAL AIR FORCE

Flying Branch  
Administrative Branch  
Technical Branch  
Medical Branch  
Dental Branch

## Memoranda

(Then follow the names of 2 Overseas Cadets granted temp. commissions, and 32 Cadets granted hon. commissions. as Sec. Lieuts.)

The following Prob. Flight Officers are granted hon. commissions. as Sec.

Lieuts. :—S. Stevens ; Jan. 13, 1919. A. C. Norcross ; Jan. 16, 1919. C. B. Symington ; Feb. 10, 1919. L. W. Smith ; Feb. 26, 1919. N. V. W. Lucas ; March 7, 1919. E. C. Phillips ; March 23, 1919. F. T. B. Snow ; April 4, 1919. A. L. Parnell ; April 7, 1919. B. L. Pelham ; Sept. 17, 1919. T. O. M. Pope ; Oct. 12, 1919.

Sec. Lieut. G. C. Oliver relinquishes his commission on account of ill-health contracted on active service, and is permitted to retain his rank ; May 29.

## Notes on "Civil Aviation"

London Gazette, June 4

### Aeronautical Instruction

MR. HOPKINS asked the Secretary of State for War and Air whether it is a fact that at the commencement of the present educational session, October 1, 1919, no course in aeronautics was available for students, either at the Imperial College, or at Cambridge, nor is available at the present time ; and whether it is the intention of the Government, in view of the inadequacy of the provision for instruction, to render financial assistance for the teaching of aeronautics at Cambridge and the East London College, or whether it is intended to exclusively confine Government assistance to the work at the Imperial College ?

Mr. Churchill: With regard to the first part of the question, there is a Chair of Aeronautical Engineering at Cambridge, and undergraduates reading for an engineering degree can study the aeronautical side of this subject. The course at the Imperial College is a post-graduate one, and though lectures have begun, the scheme will not be in full operation until the commencement of the academic year, next October. With regard to the second part, I would refer my hon. friend to the Government decisions quoted in the Report, dated December 12 last, to which I drew his attention in my reply to his question on 17th of last month. One clause of this report states that applications for assistance in these matters from any university will be considered

24 June 1920 : Canadian ?? amends the BRITISH NORTH AMERICA ACT, an Address to His Majesty, King George V.,

The Minister of Justice moved the following resolution in the House of Commons :

That a humble Address be presented to His Most Excellent Majesty the King in the following words :

To the King's Most Excellent Majesty :  
Most Gracious Sovereign :

We, Your Majesty's most dutiful and loyal subjects the Commons of Canada, in Parliament assembled, humbly approach Your Majesty praying that you may graciously be pleased to give your consent to submit a measure to the Parliament of the United Kingdom, to amend the British North America Act, 1867, in the manner following, or to the following effect "An Act to amend the British North America Act, 1867.

Be it enacted by the King's Most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same as follows :

Section ninety-one of the British North America Act, 1867, is hereby amended by adding thereto the following subsection:

"Any enactment of the Parliament of Canada otherwise within the legislative authority of the Parliament shall operate, and be deemed to have operated, "extraterritorially" according to its intention in the like manner and to the same extent as if enacted by the Parliament of the United Kingdom."

All of which we humbly pray Your Majesty to take into your favourable and gracious consideration.

The Minister of Justice (the Right Hon. C. J. Doherty) said : The entire purpose and effect of the legislation we are asking to be enacted is to give an interpretation to the provisions of the British North America Act which *will settle what is now* a "disputable or unsettled" question.

There is a jurisprudence and there are judgments which hold, or at all events, are interpreted as holding, that there is something restricted in the effect of the legislation of the Parliaments of the Dominions as compared with the effect of legislation enacted by the Parliament of the United Kingdom and the effect which attaches to legislation enacted by them.

The interpretation that we ask for is that "*it should be enacted that the legislation of this Parliament, within the scope of its attributions [it is not suggested to extend them in anyway] shall be deemed to operate extra-territorially according to its intention, in like manner and to the same effect, as if enacted by the Parliament of the United Kingdom.*"

## Notes on "Civil Aviation"

1. We are not seeking to encroach on the jurisdiction of the United Kingdom. . . .
2. Now that effect goes no further than that such law shall be law in Canada ;
3. we do not pretend that it can be enforced in foreign countries. But
4. we wish to make certain that the law imposing obligations upon the citizens of Canada to be carried out outside the limits of our own country.
5. we will be "**entitled to enforce in our courts**" whenever our citizens may return within this jurisdiction.
6. That [enforcement] is precisely "**the power attached to the legislation**" of the Imperial Parliament.

As I say:

1. it is not at all "a settled thing" that it [enforcement] "does not attach to our legislation".
2. There are "judgments" which certainly justify the conclusion that it does ;
3. there are "other judgments" that justify the conclusion that it does not.

In the absence of such settlement it would be necessary for us *in each particular case* to go to the United Kingdom to ask for "jurisdiction".

The particular matter that has brought this to our attention is the *legislation which we may be called upon to enact* and the *regulations which it may be necessary to impose to govern Canadian aerial navigation*.

Any such legislation would necessarily *have to deal with Canadian aerial navigators* [the same as naval navigators] and *the management [does this mean pilotage ?? ] of Canadian aircraft*, and [I think it is obvious] that *if doubt be suggested as to whether we [Canadian lawmakers] can enforce those laws* with regard to "the operation" of any Canadian aircraft the moment it gets outside the actual limits of Canada, we would be put in a very difficult position.

Now, it seemed to us better to settle the question once for all.

The Hon. W. S. Fielding (Liberal, Shelburne and Queen's, N.S.) asked for an illustration of what the Minister desired to control by this legislation.

The Minister of Justice replied that *there were in process of preparation certain rules of aerial navigation* which, it was expected, *under "conventions" and "treaties" to be made [the ICAN and the Treaty of Versailles], would govern the aircraft of all the different nations*.

Under those *[conventions and treaties]* it would be their obligation *[all the different nations]* to see that their aircraft and those managing it conformed to "the rules" *not only while they were actually within their country*, but when they got in the air over the ocean or over some other country.

Mr. Fielding : Up over Great Britain, for example ?

The Minister of Justice replied in the affirmative, but said that this would not exclude the authority of any country in which their men might be. There was no pretension that their law would prevail in any other country, but if their citizen came under the operation of this law he would be bound in addition to conform to such obligations as they might impose upon him as a Canadian citizen. The effect of that would be that if they did want legislation imposing certain obligations upon their citizens while they were outside this country, when those citizens returned they would be in a position to enforce those laws within Canada. The only effect would be to remove any doubt as to whether there was a difference between the effect of a Dominion law in that respect and the law of any other country.

Mr. Fielding said that the question in his mind was, if a Canadian went to England and committed some offence against these laws they laid down in England, was he to be punished when he returned to Canada ?

The Minister of Justice : If he has violated our laws which we have prescribed as a rule of conduct while he is outside of this country then when he returns he will be liable to such consequences as our legislation imposes."

Mr. Fielding : Even though he has already been punished in England ?

The Minister of Justice : "In that case I have no doubt that the rule against punishing a man twice for the same offence would apply."

This motion having been agreed to, a further motion was agreed to for sending a message to the Senate requesting their Honours to unite with the House of Commons in the Address.

### DEBATE IN THE SENATE.

In moving that the Senate do unite with the House of Commons in the said Address, on 26th June,  
The Leader of the Senate and Minister of Civil Re-establishment



## Notes on "Civil Aviation"

(Hon. Sir James Loughheed) said that the object of this was to secure Imperial legislation amending the British North America Act, whereby it would be placed beyond all controversy that the Dominion Government had authority to legislate extra-territorially. They were entering into arrangements, for instance, with the United States, to enforce regulations that might be agreed upon between the two countries respecting aerial navigation. The United States, being a sovereign Power, could exercise jurisdiction extra-territorially to enforce regulations, and persons who violated those regulations outside the United States could be punished upon their return to United States territory. It would be unfortunate if they in Canada were precluded from enforcing their regulations likewise.

The Hon. H. Bostock (Leader of the Opposition) could not see why this legislation was necessary. It seemed to him that any citizen of Canada who went outside the Dominion and infringed the law of the country could be punished when he came back if the Government thought it desirable to punish him.

The Leader of the Senate :

" Not if the offence has been committed outside of Canada."

Mr. Bostock :

" The offender can be punished when he comes back. We cannot of course punish him if he is outside our jurisdiction."

The Leader of the Senate :

"

It is not absolutely clear that we have the right, for the constitutional reasons I have pointed out."

The motion was agreed to, and on a motion of Sir James Loughheed it was resolved that an Address be presented to His Excellency the Governor-General, respectfully requesting that His Excellency would be pleased to transmit the said Joint Address to His Majesty.

### NAVAL DEFENCE OF THE EMPIRE.

On 28th June the House in Committee of Supply This debate continues the discussion (vide JOURNAL OF THE PARLIAMENTS OF THE EMPIRE, Vol. I., No. 3, page 486) following upon the statement of the Minister of Naval Service on Naval policy and the British Government's gift of ships to Canada discussed

the following item : DEBATE IN HOUSE OF COMMONS.

Mr. Michael Clark (Independent, Red Deer, Alta.) conceded that the Government had to take into their consideration the fact that they in Canada had wholeheartedly fought alongside the Old Land and other portions of the Empire through the great war [...] He wished to pay a compliment to his hon. friend the President of the Privy Council (Mr. Rowell), who seemed to be the one member of the Government who in that country had devoted himself with wholeheartedness to making Canada's contribution to the League of Nations a real success. In Great Britain the world was distinguished in having Arthur J. Balfour, of almost unparalleled experience and ability in politics, Lord Grey, whose knowledge of foreign policy was not exceeded by anyone, Lord Robert Cecil, Lord Bryce, and numbers of others of little less calibre who were working might and main to make the League a success. He thought they would have spent their time better if they had voted a sum of money for bringing their own people up to the high

mark of civilised thought upon this question, instead of devoting two and a half millions at almost the first Session of Parliament after the war was over for the buying or up-keep of vessels of warfare. If the war did anything it demonstrated the absolute fallacy of the old pagan doctrine that to prepare for war was the best way to maintain peace. If ever war could have been prevented by preparation for war then the last war surely would never have occurred. The war had demonstrated the further fact that a nation not warlike at the beginning of a war could be one of the most potent factors in the final stages of that war.

The Next War.

Against whom were they going to fight in the immediate future ? The only suggestion he had heard was that they might have a war between Japan and America. That could not possibly implicate the British Empire because Japan was their ally. They had so impoverished themselves that their difficulty now was not to supply huge armies abroad, but to feed the ordinary run of their population at home. If the vessels were up to date at the present moment, they certainly would be obsolete in five years. He wondered if the Government had taken it into their consideration that some wise men from the military point of view were already prophesying that the next war would be in the air. If the next war would be in the air, it would seem rather a useless way of meeting it by making preparations in the old way for a war on the sea. They had better make their Air Board a reality instead of a name. What was the use of building navies if their fiscal policy drove them off the ocean ? It was what it did to America and it was what it had done very largely to Canada [...] if they were to continue this loose confederation, of which all the parts were free, known as the British Empire, they would do better possibly permanently to have a system of co-operation between different parts of the Empire. Let them re-establish their financial resources, and when they met in the Imperial Conference, whoever were the representatives of Canada would enter into all these weighty considerations and would work out a system of co-operative defence which would make the Empire bigger and abler to defend itself in the future than it was in this war.

30 June 1920 : Ottawa : The estimates for the Air Service were discussed in Committee of Supply.

#### DEBATE IN HOUSE OF COMMONS.

The Minister of Militia and Acting Solicitor-General (Hon. Hugh Guthrie) said that last year they passed an Act to establish an Air Board. It so happened that they had in Canada about 12,000 of the most highly trained military airmen who were to be found in the world. A paper establishment had been authorised up to 5,000 men, including all ranks. The proposal was briefly to recruit, as far as possible, the trained men who were to be found in Canada to-day for the purpose of maintaining their interest in and sympathy with the work, in case in the future it might develop for commercial, scientific, or other purposes, as well as for military operations.

Aeroplane Outfit from Great Britain.

They had received from Great Britain a very extensive aeroplane outfit, consisting of aeroplanes, seaplanes and the necessary additional craft, the value of which he thought

amounted to between five and six million dollars. In addition to that they were acquiring certain of their own property at Vancouver as an air station, another property at Morley in the Province of Alberta, another place in the Province of Quebec at or near Lake St. John and, in addition, a small experimental station at Rockcliffe, in the City of Ottawa.

All they needed was to give a limited training to a limited number of airmen in Canada to keep their hand and their eyes in. They proposed doing this by means of Provincial Associations. In each Province of the Dominion the Lieutenant-Governor had undertaken to form a Provincial Association and to enlist as many men as he could in the service. They proposed to give these men a limited training each year, taking them to one of their training stations, there to give them one month's flying amounting to, he thought, two hours a day per man. The Objects of the Air Board.

The objects to be attained by the Air Board were not by any means all military. The expenditure on this item would be about \$800,000 for scientific, exploration and other commercial purposes. The Government of Quebec had entered into an arrangement with them, on the basis of fifty-fifty, so far as expense was concerned, for the establishment of a station in some part of Northern Quebec, near Lake St. John, for the purpose of exploration and scientific work in that province. They hoped for great results from that undertaking.

They did not propose to enter into any commercial flying as a Government undertaking, but they did propose to supervise all flying of that kind and all air routes. They proposed to license pilots, to license aircraft, to lay out routes and provide the rules and regulations. At the present time they were laying out an air route between North Bay and Winnipeg. The only thing that was necessary in regard to that, he was informed, was to see that they were getting suitable landing stations, and they were locating these upon Crown lands, which would involve no expense. Between Winnipeg and Calgary it was not necessary to have any landing-place, but from Calgary on to Vancouver it would be necessary to provide landing places, and he believed suitable sites were being located throughout the mountains. Then from Ottawa eastward to the sea it was also proposed to lay out flying routes. This was a modern development, and they intended to keep up with other nations, and particularly with the United States and Great Britain.

Gifts from the United Kingdom,

Mr. Ernest Lapointe (Liberal, Quebec East) declared that all these gifts of warships and aircraft should be accepted by the Parliament of Canada and by nobody else. Among other things the Imperial Conference next year was going to consider was the defence of the various parts of the Empire on sea, on land and in the air, and the fact that Canada, or any other Dominion, had accepted gifts from the United Kingdom meant that they might be placed in a delicate position to refuse concurrence in the plans which would be submitted to the Conference by the statesmen of the United Kingdom. The representatives from Canada and the other Dominions should go absolutely untrammelled by the acceptance of gifts or in any other way.

The Hon. Henri S. Beland (Liberal, Beauce, Que.) thought that as to exploration it was very doubtful whether they would

## Notes on "Civil Aviation"

derive any benefit from this expenditure so far as scientific purposes were concerned. The only thing for which he could see it would be of any use to the country would be the protection of their forests against fire. Now as far as military purposes were concerned the hon. Minister claimed that some service would be rendered to the country thereby. They had already gone very far in that session after the war was over both on military expenditure proper and on naval expenditure. Were they going to launch the country on expenditure for air preparation ?

30 June 1920 : Handley Page Transport : Handley Page Type O/400 Ser. No. HP-2? G-EATP ex RAF H4600 catches fire in the air over Örebro, Sweden. Engine fire due to a broken fuel line. forced landing carried out, aircraft bounced, caught fire and was destroyed.

31 June 1920 : Handley Page Transport : Handley Page Type O/400 Ser. No. HP-2? G-EAKA ex RAF crashes during T/O from a lane cut in a cornfield. Corn nearly 2m high wraps around landing gear, aircraft flips onto its back. Aircraft was a total wreck - damaged beyond repair.

03 July 1920 : Representatives of Canadian Air Board meet with Delegates of the Provincial Executive Committees of the "Air Force Association" of Canada at the Royal Alexandra Hotel, Winnipeg Manitoba

Representing the Canadian Air Board

Colonel O.M. Biggar, Vice Chairman of the Canadian Air Board, Ottawa

Air Corranadore A. K. Tylee, Commanding Canadian Air Force, H.Q. Ottawa..

Squadron Leader F. G. Pinder: Canadian Air Force, H Q. Staff, Ottawa..

AFA-C Provincial Committee Executives for British Columbia

Major R. Ker,

Capt. L. Dean

AFA-C Provincial Committee Executives for Alberta:

Lieutenant-Governor of Alberta, the Hon. Dr. Brett

Lieutenant w. Gee

AFA-C Provincial Committee Executives for Saskatchewan

Brig.-Gen. G. S. Tuxford,

Capt. R.A. Del'Haye, (De L'Hay) DFC - 14-20 October 1918

Lieut. T.H. Spence

AFA-C Provincial Committee Executives for Manitoba

D. c. Coleman, Esq.,

Mayor C. F. Gray,

Major R. P. Featherstonhaugh,

Cap. G. H. Cathcart

F. G. Mathers, Esq.

E. Speer, Esq.

AFA-C Provincial Committee Executives for Ontario:

Major E. Graham Joy,

Capt. A. J. Hember,

AFA-C Provincial Committee Executives for Quebec

E. Greenwood, Esq.

Capt. C. C. Falkenberg

## Notes on "Civil Aviation"

AFA-C Provincial Committee Executive for Prince Edward Island:  
Lieutenant H. R. Stewart

AFA-C Provincial Committee Executive for New Brunswick :  
Lieutenant F. S. E. MacRae.

14 July 1920 : During the past six months:

113 Licences for ground engineers have been granted in England, Total of 345 issued since May 1st, 1919.

1 Licence for engineer have been granted in England, Total of 1 issued since May 1st, 1919.

107 Certificates of airworthiness have been granted in England, Total of 325 issued since May 1st, 1919.

The Dominions, India, and the Colonies.

Arrangements are being made to secure "the greatest possible measure of uniformity" between Air Regulations of each unit of the Empire.

The "Air Navigation Bill provides for the adaptation by Order in Council to British Possessions, exclusive of the self-governing Dominions and India, of the legislation in force in this country."

India and Canada have formed Air Boards and have published Air Regulations.

**The Canadian Air Board Act was passed in January, 1919, of from five to seven members appointed by the Governor in Council.**

The duties of the Board resemble those of the Air Council in Great Britain.

A Superintendent of Flying Operations, with a seat on the Board, **"controls the licensing of personnel, aircraft, and air harbours, and is responsible for Civil Aviation conducted by private enterprise."**

An Associate Air Research Committee, formed under the Honorary Advisory Council for Scientific and Industrial Research, began its sittings on Feb. 7th, and is in close cooperation with the Air Board.

Dangerous flying was prohibited by Order in Council on July 7th, and Civil Aviation Regulations were issued on Jan. 17th last.

Experiments in photo-topographical surveying have been authorised in the Province of Quebec. src : The Aeroplane JULg 14, 1920 pg 88

08 September 1920 : light blue - the Farman colour [...] those who were in the R.F.C. in the early days will remember **the colour of the nacelles** on Henris, Longhorns and- Shorthorns.

Martin and Fagg, the two ground engineers, both of whom have had considerable flying experience before and during the war, were invalided from the Service owing to injuries received on active service.

Folkstone airdrome : Martin, Fagg and Brown, the two ground engineers and mechanic respectively, so long as sufficient encouragement is forthcoming, they may be expected to accomplish whatever they may set out to do. - The Aeroplane pg 498.

15 September 1920 : "The Department of Civil Aviation has begun the publication of a series of **notices to civilian ground engineers**. The first instalment of these appears on page 528 of this issue" Aeronautical Engineering : supplement to The Aeroplane sept 15, 1920.

september 1920 : The Aeroplane : The specifications for "Exploratory and Forest Patrol Aircraft" to be bought by the Canadian Air Board were published on Sept. 29th.

14 December 1920 : Handley Page Transport : Handley Page Type O/400 Ser. No. HP-25 G-EAMA departs Cricklewood Aerodrome in fog and was flying low when it struck trees and crashed at Golders Green, catching fire, killing 4 of the 6 passengers and both crew.

## Notes on "Civil Aviation"

14 January 1922 : Handley Page Transport : Handley Page Type O/10 Ser. No. HP-43 G-EATN Crashes on approach to Le Bourget Airport, France killing all five on board.

10 July 1923 : Handley Page Transport : Handley Page Type W-8 Ser. No. W-8-1 G-EAPJ forced to land with engine trouble Poix, France. hit a sunken road and broke its back, damaged beyond repair.

1919-1922 : Alfred John Sutton Pippard partner in a firm of aeronautical engineers.

1919 : 1923 Alfred John Sutton Pippard associated with the experimental testing of airship structure in connection with the building of H.M.A.S R.100 and R.101 (see B.21).

1922-1928 : Alfred John Sutton Pippard - Professor of Engineering at Cardiff,

1928-1933 : Alfred John Sutton Pippard - Professor of Engineering at Bristol

23 March 1933 : Alfred John Sutton Pippard appointed to the Chair of Civil Engineering at Imperial College, London,

1914 : Alfred John Sutton Pippard receives degree in Civil Engineering, University of Bristol,

1 April 1938 : Alfred John Sutton Pippard elected to the Council the Royal Aeronautical Society

June 1954 : Alfred John Sutton Pippard elected to Fellowship of the Royal Aeronautical Society

1933 Alfred John Sutton Pippard takes up position as President - Dept. of Civil Engineering , Imperial College

published by the Technical Department, Air Ministry.

- a) The "worked-out examples" in H.B 806 refer to a particularly awkward aeroplane called the "Snag".
- b) H.B. 806 was the aircraft designer's guide to stress calculation.
- c) During the war period the "responsibility for the strength of aircraft" lay with the Government.
- d) Post WW1, the responsibility was shared between the Air Ministry and the contractor.<sup>156</sup>
- e) H.B. 806 was revised and enlarged, published as A.P.970, the bible of the designer of "Service" aircraft.
- f) 1932 : the "strength of aircraft" differences between civil and military aircraft became recognised and a separate handbook for civil aircraft, A.P.1208, was produced. (Flight - March 1939 page 227 - Airworthiness and the ARB)
- g) UK-Ministry of Defence (UK-MoD) Defence Standard (Def Stan) 00-970 Issue 1 dated 12 December 1983 Design & Airworthiness Requirements for Service Aircraft (Aeroplanes), produced on behalf of the Defence Aviation Safety Board (DASB) by Airworthiness Design Requirements and Procedures (ADRP), Air/Land Technology Group (A/LTG), MoD Abbey Wood.
- h) Aviation Publication (AvP) 970 dated 1959 Design Requirements for Service Aircraft
- i) Air Ministry Publication (AP) 970 2nd Edition dated 1924 Handbook of Strength Calculations
- j) Handbook of Strength Calculations (HB) 806 1st Edition dated 1918

06 January 1920 : UK Air Ministry Method of specifying strength:

- A. the load factor when the centre of pressure is in its most forward position : this gives, in each case, a definite load for every part of the machine, including the tail plane and the fuselage.
- B. the load factor when the centre of pressure is in the position corresponding to maximum horizontal speed at ground level : this also gives a definite loading.
- C. the factor of safety in a terminal nose dive, a condition which is again quite definite for each aircraft, the airscrews being assumed to be removed. A thru C are considered sufficient to determine the strength of the wings and of the tail plane ; also for certain loadings of the fuselage when in flight.
- D. For the strength of the fin and rudder, specification, this gives the value of an assumed lift coefficient, which, when the maximum speed of the craft is known, determines uniquely the strength required in these parts, and also, in so far as the later loadings are concerned, in the fuselage. The values assumed for the lift coefficient are considered sufficient to cover adequately the maximum forces which can be imposed on the rudder and ript by the pilot when exerting his full force so as to obtain as rapid a turn as possible.
- E. Strength of undercarriages--specification (e)--is dealt with under the conditions of both static and dynamic loads, neither case being considered sufficient by itself to meet all requirements.

For the use of the tables it should be noted that the two terms:

1. factor of safety, and
2. load factor

are defined in the accepted engineering sense :

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<sup>156</sup> Flight - March 1939 page 227 - Airworthiness and the ARB

## Notes on "Civil Aviation"

1. Factor of safety = (Failing strength of a member of the structure / Worst possible load occurring under any condition of flight)
2. Load factor = (Failing strength of a member of the structure / Load in member under horizontal steady flight conditions)

In addition to the above it is essential (f) that, in the case of any one flying wire, or duplicate pair of wires, being removed from the aircraft, the strength of the remaining portion should be such that at least one-half of the scheduled load factors and factors of safety shall be obtained under each of the foregoing conditions. For this particular case incidence or other normally redundant bracing is naturally assumed operative where necessary.

Methods of calculation.--In using the above schedules the calculations of strength will be checked by the methods of the "Handbook (H.B.) of Strength Calculations" (H.B. 806, 2nd edition), published by the Technical Department, Air Ministry. In all calculations and in specifications of load factors and factors of safety, design figures should be employed, and not those obtained from breaking tests. Further, where dealing with steel tubes, the specifications of the Engineering Standards Committee, based on the figures for yield points, are approved for stress calculation purposes; for stream line wires the breaking load should be taken in preference to the yield point, which is, in these cases, ill defined. Redundant wires, except as mentioned in (f), are to be considered as neglected.

With a view to facilitating the use of the schedule the following additional matter should be noted :—

1. That for (a) and (b) the positions of the centre of pressure should preferably be determined by a test on a model with a 6-in. chord at 60 ft/sec., but that the Air Ministry might agree to issue a certificate based on results for a monoplane model of 3-in. chord tested at 40 ft/sec. For biplanes, a biplane test is preferred; similarly for triplanes. For case (b) the maximum horizontal speed at ground level should be obtained from the formulae given in § (2) below. From this speed the value of the lift coefficient is obtained and the position of the centre of pressure determined from model tests as defined above.
2. That for (b) and (d) the maximum speed at ground level should be defined by the following formula, giving the maximum speed for given loadings and weight of aircraft (should the manufacturer desire to specify the maximum speed in any other manner, he is at liberty to make a special application) :

**1920 : British Dept. of Defense - Ministry of Munitions creates "Disposals Board" to dispose of "War Assets".**

1920 : Entire stock of surplus aviation items sold to the Imperial and Foreign Corp. Ltd (I&FCL), I&FCL transfer 10,000 airframes, 30,000 aero-engines and spares to the "Aircraft Disposal Co. (ADC) for £1,000,000.00.

07 October - 17 October 1920 : Air Board / CAF Trans Canada flight from Dartmouth NS to Victoria BC.

1920 : Air Board aircraft being worked to death: Pilots worried about shrinkage in wood of Spars in Main planes of WW1 era aircraft. Source ref : TSB documented - Brace for Impact: Air Crashes and Aviation Safety By Peter Pigott

17 January 1920 : Canada Air Board issued Air Regulations for 1920 come into effect, establishing a set of air regulations that required all pilots, air engineers, and aircraft to be licensed with the Air Board. also empowered the "Air Board" to conduct flying operations using government-owned aircraft, and to form the first true CAF post WW1. The first chairman of the board, Colonel Oliver Mowat Biggar, Judge Advocate-General, & Vice-Chairman brought to his duties much knowledge of overseas air policies gained while attending the Paris Peace Conference as a Canadian delegate;

1920 : The Canadian Air Force was re-constituted in 1920 and the officer in command (Air Commodore Tylee) held the title of Air Officer Commanding. It was also from 1920 to 1922 that Air Vice-Marshal Sir Willoughby Gwatkin served as Inspector-General of the Canadian Air Force although formally command was held by Tylee.

Air Commodore Arthur Kellam Tylee OBE (24 April 1887 – 13 April 1961) was Canadian officer who served in the Royal Flying Corps during World War I. After the War, Tylee was the first Air Officer Commanding of the Canadian Air Force.

Career

Tylee was born on 24 April 1887 in Lennoxville, Quebec,[1] the son of Arthur Mailland Tylee and his wife Harriet F. Kellam.[2] Tylee later studied at the Massachusetts Institute of Technology[3] from around 1910[4] to 1913.[5]

Tylee joined the Royal Flying Corps in August 1915,[3] being granted the probationary rank of second lieutenant in December of that year; he had previously held the rank of lieutenant in the Canadian Militia.[6] At least some of his junior years in the RFC were spent flying the Martinsyde G.100 on No. 23 Squadron on the Western Front.[7] Tylee was made a flight commander in

## Notes on "Civil Aviation"

February 1917[8] and in March he was made a squadron commander and given the temporary rank of major.[9] It was also in 1917 that Tylee was sent back to Canada, to command Camp Borden in Ontario before being posted to England to carry out advanced work.[3] On 1 April 1918 Tylee was transferred from the Royal Flying Corps to the newly created Royal Air Force in the temporary rank of lieutenant colonel[10] and returned to Canada to serve as the Inspector of Training for the Royal Air Force in Canada. He continued in this role until the end of World War I.[3] In June 1918 Tylee was mentioned in dispatches for valuable war service[11] and he was also made an officer of the Order of the British Empire.[3]

After the War, Tylee returned to Canada. By 1920 Tylee was selected to be the first Air Officer Commanding the Canadian Air Force and granted the rank of air commodore. Tylee established a small headquarters at Ottawa under the oversight of the Air Board[12] on which Air Vice-Marshal Sir Willoughby Gwatkin served. In October 1920 Tylee, accompanied by Flight Lieutenant George Thompson, set out to complete the last leg of the first trans-Canadian flight (which had started in Halifax in July), departing from Calgary in a de Havilland DH-9A. They arrived in Vancouver after 4 days of flying.[13] In February 1921 Tylee turned his attention to the matter of what might make a suitable flag for the Canadian Air Force. In a note he wrote to Gwatkin, Tylee proposed that the RAF Ensign be adopted with a maple leaf at the centre of the roundel. Gwatkin in turn applied to Air Marshal Sir Hugh Trenchard, the British Chief of the Air Staff, who rejected the proposal on the basis that "the sentiment of unity between the Air Services of the Empire" ought to be maintained. It was not until 1940 that Tylee's proposed design was adopted.[14] Later in 1921 Tylee was replaced as commander of the Canadian Air Force by Wing Commander Ronald Redpath[15] Tylee died on 13 April 1961 and was buried in the Compton Cemetery in Quebec.[1]

Tylee's successors, not being air officers, only held the title of Officer Commanding. In 1922, the senior Air Force post was redesignated as the Director and in 1924, when the Canadian Air Force was granted its Royal prefix, the officer appointed to command the Air Force continued to hold the title of Director. From 1932 to 1938 the title of Senior Air Officer was used. In late 1938, the Air Force became an independent service and its professional head was retitled Chief of the Air Staff, bringing the Canadian higher command arrangements and nomenclature into line with that of the British and Australian air forces.

January 1920 : RNAS-C Dartmouth now Canadian Air Board entity, performs civil and service flying duties.

18 February 1920 : Ottawa, Order-in-Council authorized a new, part-time, non-permanent CAF (a militia arm within the Air Board Sir Willoughby Gwatkin became the first Inspector General of the Canadian Air Force in April 1920 with Air Commodore A. K. Tylee appointed as air officer commanding. William Lyon Mackenzie King : "Where does the Minister expect invasion from? ... defence against whom[?]") a non-permanent service with a provisional establishment of 1,340 officers and 3,905 airmen to work alongside the civil aviation division under the control of the Air Board. Initially, the Canadian Air Force adapted regulations from the Royal Air Force (RAF). The Canadian Air Force chain of command for the first air officer commanding was a relatively direct line through the inspector general to the Air Board. the initial cadre of Canadian Air Force officers and enlisted men were considered "in continuous service but on inactive, unpaid leave" except when on refresher training. rank structure laid down for the Canadian Air Force included: air vice-marshal, air commodore, group captain, wing commander, squadron leader, flight lieutenant, flying officer, pilot officer, warrant officer, flight sergeant, sergeant, corporal, air mechanic (1st class) and air mechanic (2nd class). (The use of Military Equivalent of Canadian Air Force ranks will be discontinued throughout the Service forthwith and only the ranks hereunder quoted (i.e., group captain to pilot officer) will be used both in correspondence and conversation." - Camp Borden, routine order, 28 November 1922)

**An air officer is an air force officer of the rank of air commodore or higher.[1] Such officers may be termed "officers of air rank".[2] While the term originated in the Royal Air Force, air officers are also to be found in many Commonwealth nations who have a similar rank structure to the RAF.**

**Air officers holding command appointments receive the title Air Officer Commanding (AOC), whereas air officers holding commander-in-chief positions are titled as Air Officer Commanding-in-Chief (AOC-in-C).**

### British usage

**In the British Armed Forces, where the term originated, an air officer is equivalent in concept to flag officer and general officer in the Royal Navy and Army respectively. Specifically while the Army uses General Officer Commanding (GOC), the Air Force uses Air Officer Commanding (AOC) to designate the senior officer in a formation.[3]**

**Note, however, that in the British Armed Forces, while an air commodore is an air officer,[4] his Royal Navy equivalent (commodore) is not considered a flag officer, nor is his British Army or Royal Marines equivalent (brigadier) considered a general officer. In 1919 when the RAF introduced its own air officer ranks, the preceding RAF and equivalent army rank was brigadier-general, which was a general officer rank until its abolition in 1922. In some other countries, most notably the armed forces of the United States, army, air force and marine corps one-star officers are considered to be general officers, and one-star officers of the navy and coast guard are considered to be flag officers.**



## Notes on “Civil Aviation”

There are multiple air officer command appointments. Additionally the RAF maintains two home country air officer appointments. These are Air Officer Scotland[5] and the Air Officer for Wales.[6]  
On ceremonial occasions many RAF air officers are entitled to wear embellished shoulder boards and the gold and blue sash. This applies to all officers at or above the rank of air vice-marshal and holders of the following air commodore posts:

- Commandant of the Royal Air Force College Cranwell
- Air Officer Scotland and Northern Ireland
- Air Officer Wales

With the exception of marshals of the RAF, the embellished shoulder boards feature the golden air officers' eagle and wreath device surmounted by a lion statant guardant. For marshals of the RAF, the embellished shoulder boards display the air officer's eagle and wreath, two crossed marshal's batons and, since the coronation of Queen Elizabeth II, the St Edward's Crown representing royal authority.[7] Prior to 1953, the Tudor Crown (sometimes called the King's Crown) was used.

Air officer ranks

The air officer ranks are as follows: Marshal of the Air Force

Air chief marshal

Air marshal

Air vice-marshal

Air commodore

Royal Flying Corps

Director-General of Military Aeronautics

- 1914–1917 – Lieutenant-General Sir David Henderson
- 1917–1918 – Major-General John Salmond
- 1918 – Brigadier-General Edward Ellington

General Officer Commanding the Royal Flying Corps in France

- 1914–1915 – Major-General Sir David Henderson
- 1915–1918 – Major-General Hugh Trenchard
- 1918 – Major-General John Salmond

Royal Naval Air Service

Heads of the RNAS

- 1914–1915 – Captain Murray Sueter, Director of the Admiralty Air Department
- 1915–1917 – Rear Admiral Charles Vaughan-Lee, Director of the Admiralty Air Department
- 1917–1918 – Commodore Godfrey Paine, Fifth Sea Lord and Director of Naval Aviation

18 March 1920 : Airco DH.16 G-EACT operated by Aircraft Transport & Travel Airco crashes into the English Channel off Beachy Head; the pilot is rescued by a ship.

29 March 1920 : Nieuport Delage 30T F-CGTI crashes at Lympe.

20 April 1920 : Robert McCombie issued with the first Canadian “Air Engineer” license.

20 April 1920 : Curtis JN-4 owned by Aerial Service Co. Regina Sask. issued with the first C of R in Canada. This aircraft was however registered with British markings : G-CAAA.

23 May 1920 : Outgoing PM Borden authorises a budget of \$1.6 million for continued operation of the Air Board. William Lyon MacKenzie is quoted as saying “a waste of funds, Gov’t doesn’t need race car drivers, lion tamers and acrobats : all of whom are in safer professions. Why should it extend this courtesy to aviators?”

9 July 1920 : Shorts Bros. build and display the highly polished “Swallow” (later re-named “Silver Streak”) monocoque fuselage bi-plane at the Olympia Air Show.

- a) First all Duralumin aircraft built in the UK.
- b) no wood or fabric was used.
- c) The structure of each wing was made up of two steel tube spars with duralumin ribs “sweated on”.
- d) The wings and tail were skinned with sheet aluminum riveted to their respective frames.
- e) The fuselage frames had an oval cross section and were made of duralumin with channel section stringers.
- f) Duralumin sheets were riveted to the duralumin airframe to make up the aircraft’s skin.
- g) Thicker duralumin sheets were used around the cockpit.
- h) the front of the fuselage was enclosed by a single duralumin sheet, making a fireproof bulkhead.
- i) The Air Ministry refuse to issue a Certificate of Airworthiness to the Swallow. (<http://oldmachinepress.com/2014/04/>)
- j) powered by a water-cooled, 240 hp (179 kW), straight, six-cylinder Siddeley Puma engine.
- k) designed for a pilot and 400 lb (181 kg) of cargo in front of the cockpit.

## Notes on “Civil Aviation”

- l) modifications would easily allow the aircraft to carry a passenger in place of the cargo.
- m) wingspan of 37 ft 6 in (11.4 m)
- n) length of 26 ft 5 in (8.1 m).
- o) empty weight of 1,865 lb (846 kg)
- p) loaded weight of 2,870 lb (1,302 kg).
- q) max speed was 125 mph (201 km/h).
- r) 450 mile (724 km) range.

31 July 1920 : Reginald Groome issued with the first commercial Canadian Pilot's Lic.

14 August 1920 : First flight of B-1 sea-plane from Lake Union, Wa to Victoria, BC.

20 August 1920 : UK Air Ministry flight tests Shorts Bros. “Swallow”, by John Parker . renamed “Silver Streak”. The thin aluminum wing and tail skins were found to lack the needed strength and were replaced with duralumin sheeting

1920 : Jericho, BC - first Canadian Air Base, Jericho Beach Flying Boat Station, No.1 (Operations) Squadron operates 5 ea HS2L Flying Boats G-CYEB (ex USNAS A1985)

1920 : Canadian Air Force establishes No.2 Operations Squadron at High River Alberta, operating DH-4 types. DH4 G-CYCW (ex RAF F2713) single seat.

March 1920 : RAF strength 25 Sqns

07 October 1920 : The first Trans-Canada flight departs Halifax (Fairey seaplane) At Winnipeg the seaplanes and flying boats used throughout the eastern leg of the journey were replaced by three DH9s

15 October 1920: International Air-Mail contract awarded to Eddie Hubbard - Hubbard uses Boeing B-1 and routinely flies B-1 sea-plane btwn Lake Union, Wa. & Victoria / Vancouver, BC over the next 8 years.

17 October 1920 :Air Commodore A.K. Tylee of the Canadian Air Board and his crew aboard the sole DeHavilland D-H-9-A biplane to arrive Minoru field, Richmond, BC. The crossing took eleven days, but time in the air was just 45 hours. - Vancouver Sun.

1920 : R.J. Groome became Canada's first “commercial” pilot

1920 : Canada's first aerodrome opened at Regina

1920 : George Gorman teams with the May bros., forming “May-Gorman Airplanes Ltd”.

1920 : Wilfred “Wop” qualifies for a Dominion flying license. Commercial License #7

1920 : George Gorman qualified for a Dominion flying license. Commercial License #8.

1920 : Pete Derbyshire qualified for a Dominion Air Engineer, receives Canada Air Engineer Certificate #6.

1920 : the first aerial survey of Canada was completed<sup>157</sup>

1920 : Commercial flying started<sup>158</sup>

1920 : American Bar Association executive forms a Special Committee for review into the Laws of Aviation.

1920 : The Laurentide Paper Company (LPC) and LPC pilot W. Ray Maxwell form Laurentide Air Service Ltd

June 1920 : The Laurentide Co. Ltd., operate Curtiss MF Seagull flying boat G-CADL and Curtiss HS-2L flying boat G-CAAC

18 August 1920 : Aircraft accident at English Bay -Vancouver BC. Court of Enquiry. Pilot Hibbart B Brenton (ex RNAS WW1) - Killed, Aircraft type : Boeing flying boat, flipped (on landing?) while pilot attempted to qualify for a commercial license in the evening. 6:30 pm - taxiid from False creek, toom off circled false bay and landed, 7:00 pm repeated flight, climbed to 1,000 ft. On landing went into steep descent and turn into a half loop, explosions (2) heard and smoke witnessed coming from the Hall-Scott engine, Pilot seen to fall from aircraft's cockpit, aircraft then crashed into the water. wreckage later pulled to shore, pilot's body later recovered - one glove missing. Newspapers : 5000 persons estimated as witnessing the event from the shore. BOI convened of 3 CAF officers (Maj. A.M Lester, Sq. Cmrd C.M Cudmore, Lt. W. Templeton), 6 witnesses called, aircraft owners (1 -Aircraft manufacturers Ltd and 2 - the Hoffar Motor Boat Co - which had just serviced the aircraft) wreckage inspected: no mechanical problem (??) August 10 BOI finding : Pilot's glove caught in elevator control cables and caused the crash. No records survive in Ottawa.

1920 : Ex-Royal Naval Air Service (RNAS) and Royal Air Force (RAF) pilots fly war-surplus aircraft in Northern Ontario.

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<sup>157</sup> By the Canadian Air Service (Air Board) for the South Labrador Pulp and Paper Company, Limited (Ltd)

<sup>158</sup> Laurentide Paper Company requests two Curtiss HS-2L aircraft from the St. Maurice Forestry Protection Association (Quebec) to fly fire patrols.

## Notes on "Civil Aviation"

January 1920: first Canadian AIR Engineer's certificate (Mr. Geordie Doan ?) and first Canadian commercial aircraft (Curtis HS2-L) registered.<sup>159</sup>

January 1920.160 Ray Maxwell & Geordie Doan make the first flight from Remi Lake (near Kapuskasing) to James Bay to Moose Factory, Ontario.

January-February 1920 : Ray Maxwell & Geordie Doan make first ambulance flight in northern Canada 11 days later.

28 January 1920 : John McNeill, Peter McArthur, Captain Keith Tailyour, E. Owens and R. L. Greene form the "Edmonton Airplane Company". Avro Aero type.

2 July 1920 : First woman commercial air passenger in Alberta, "Edmonton Airplane Company" pilot Tailyour flies a Mrs. M.R. Jennings to Calgary (2hr.30min)

15-17 October, 1920 : first commercial passenger flight<sup>161</sup>

1920 : Price Brothers and Company, Quebec - float-equipped JN-4 and 3x Martinsyde Type A

28 January 1920 : No 1 Squadron CAF (UK) disbanded, ordered to cease flying and to package all aircraft / equipment for shipment to Canada

5 February 1920 : No 2 Squadron CAF (UK) disbanded, ordered to cease flying and to package all aircraft / equipment for shipment to Canada

5 February 1920 : No. 1 Wing CAF (UK) disbanded

5 August 1920 : directorate of Air Services - Canada, disbanded - ending Canada's second attempt at creating a national air force.

31 August 1920 : Regulations for the Canadian Air Force are approved by the Governor in Council under Section of the Air Board Act, 9-10, George V, Chapter 11 - Presented by Hon. Mr. Guthrie. February 28, 1921 <sup>162</sup>

Air Board- information

Published in English

16 page Report of the Air Board, 1920

The Canadian Air Force List, June, 1921

Report on Experimental Aerial Survey at Ottawa, March, 1921 (Bulletin No. 2)

The Canadian Air Force List, January, 1922

1920: The Canadian Air Board is created, patterned on the British Air Ministry. The British Air Ministry provided substantial encouragement, including approximately five million dollars worth of equipment as a gift. John Wilson, 1st secy. The Air Board consists of three branches: Civil Aviation Branch, Civil Operations Branch and the Canadian Air Service (i.e the Air Force) .

SCHEDULE OF LOAD FACTORS AND FACTORS OF SAFETY LOAD FACTORS SUB-COMMITTEE Reports and Memoranda, No. 673. January 6th, 1920					
COMMERCIAL CLASS		Total Weight of Aircraft			
Itm	Definition	Up to 5,000 lbs.	5,000 - 10,000 lbs.	10,000 - 30,000 lbs.	Above 30,000 lbs.
A	Load factor with C.P. in its most forward position	6	6 - 5*	5 - 4*	4
B	Load factor with C.P. in the position corresponding to maximum horizontal speed at ground level	4.5	4.5 - 3.75*	3.75 - 3*	3
C	Factor of safety in a terminal nose dive	1.75	1.75	1.75	1.75
D	Specified lift coefficient for fins and rudders. (Under this loading the factor of safety of the fuselage should be unity)	0.5	0.5	0.5	0.5
e1	Static load factor on undercarriages	6	6 - 5*	5 - 4*	4
e2	Specified vertical velocity (ft./sec.) for determining travel of undercarriages	10	10	10	10

<sup>159</sup> ROYAL CANADIAN AIR CADETS PROFICIENCY LEVEL FIVE INSTRUCTIONAL GUIDE: THE ORIGIN AND DEVELOPMENT OF BUSH FLYING, A-CR-CCP-805/PF-001, Attachment A to EO C560.02 Instructional Guide

<sup>160</sup> ROYAL CANADIAN AIR CADETS PROFICIENCY LEVEL FIVE INSTRUCTIONAL GUIDE: THE ORIGIN AND DEVELOPMENT OF BUSH FLYING, A-CR-CCP-805/PF-001, Attachment A to EO C560.02 Instructional Guide

<sup>161</sup> Two passengers in the front open cockpit seat of an Air Service Avro 504k were flown from Winnipeg to Le Pas, Manitoba

<sup>162</sup> SESSIONAL PAPERS VOLUME 5 FIFTH SESSION OF THE THIRTEENTH PARLIAMENT DOMINION OF CANADA session 1921 Vol. LVII pg 11

## Notes on "Civil Aviation"

### SCHEDULE OF LOAD FACTORS AND FACTORS OF SAFETY LOAD FACTORS SUB-COMMITTEE Reports and Memoranda, No. 673. January 6th, 1920

Note	*	The decrease in load factor from the larger value is directly proportional to the increase in the weight of the craft.
Note		In the case of aircraft which are longitudinally stable over the whole flying range, these figures may be reduced by 0.5.

1920 : Avro 504K selected as the standard trainer for the Canadian Air Force, remains in service until 1928.

Canadian Air Board operated Aircraft 1919-1924 list (needs work):

Avro 552 A 'Viper' G-CYGI

Felixstowe F.3 flying boat G-CYEN  
Felixstowe F.3 flying boat G-CYDI  
Felixstowe F.3 flying boat G-CYDX  
Felixstowe F.3 flying boat G-CYBT  
Felixstowe F.3 flying boat G-CYDJ

Vickers Viking Mk. IV flying boat G-CYEX  
Vickers Viking Mk. IV flying boat G-CYET  
Vickers 'Viking' IV flying boat G-CYEZ  
Vickers 'Viking' IV flying boat G-CYEU  
Vickers 'Viking' IV flying boat G-CYEV (wrecked 1926)  
Vickers 'Viking' IV flying boat G-CYEX

Canadian Vickers Vista flying boat G-CYZZ

Canadian Vickers 'Vancouver' I flying boat G-CYXS  
Canadian Vickers 'Vancouver' II flying boat G-CYVQ  
Canadian Vickers 'Vancouver' II flying boat G-CYVU  
Canadian Vickers 'Vancouver' II flying boat G-CYVR  
Canadian Vickers 'Vancouver' II flying boat G-CYVT

Canadian Vickers Varuna I flying boat G-CYGV  
Canadian Vickers 'Varuna' flying boat G-CYZQ  
Canadian Vickers 'Varuna' II flying boat G-CYZR

Canadian Vickers 'Vedette' I flying boat G-CYFS  
Canadian Vickers 'Vedette' II flying boat G-CYYC  
Canadian Vickers 'Vedette' II flying boat G-CYGZ  
Canadian Vickers 'Vedette' II flying boat G-CYZN  
Canadian Vickers 'Vedette' II flying boat G-CYYD

Canadian Vickers 'Vedette' V flying boat G-CYYZ  
Canadian Vickers 'Vedette' V flying boat G-CYWS  
Canadian Vickers 'Vedette' VI (metal hull) flying boat G-CYWI

Curtiss HS-2L flying boat G-CYAE  
Curtiss HS2L flying boat G-CYAF  
Curtiss HS-2L flying boat G-CYGA  
Curtiss HS-2L flying boat G-CYDX  
Curtiss HS2L flying boat G-CYBA (wrecked Jericho Beach, B.C., September 1922)  
Curtiss HS-2L flying boat G-CYBB  
Curtiss HS2L flying boat G-CACT  
Curtiss HS-2L Flying boat G-CYAH  
Curtiss HS-2L flying boat G-CYAG  
Curtiss HS-2L flying boat G-CYEJ  
Curtiss HS-2L flying boat G-CYDT  
Curtiss HS-2L flying boat G-CYDS (Burnt at Jericho Beach 08 August 1921)

## Notes on "Civil Aviation"

1920 : British Air Ministry declares new route : "Cape to Cairo".

06 January 1920 : Heavier-than-air craft are now used for a variety of purposes. Heavier-than-air craft have, therefore, been divided into two classes having regard to the different qualities of airworthiness required. This separation will necessitate the granting of two distinct types of certificates. The strength necessary for safety is different in the two classes.

- I. Aircraft in the "Commercial" class includes craft used for strictly commercial work, involving only straight flying. The lower "Commercial" specification is commercially desirable since an increase of load factor involves a decrease in the range and load-carrying capacity, and need not be so exacting in order to ensure adequate safety. Stunt flying of "Commercial" aircraft of any kind is prohibited.
- II. Aircraft in the "General" and Stunt class shall be sufficiently strong to allow stunt flying of all descriptions so this class must be exacting in order to ensure adequate safety.

The schedule below is given in tabular form under these two classes. it is not intended that the schedule should be made applicable to machines already approved or designs submitted prior to some future date to be fixed by the Air Ministry. In preparing this schedule, the Load Factors Sub-Committee of the Advisory Committee for Aeronautics considered only future designs; Further revision of the present schedule from time to time will doubtless be necessary in order that it may remain in accordance with the demands arising from improvements in the constructional methods and design.

Methods of calculation.

In using the schedules, the calculations of strength will be checked by the methods of the Handbook of Strength Calculations (H.B. 806, 2nd edition) published by the Technical Department, Air Ministry.

In all calculations and in specifications of load factors and factors of safety, design figures should be employed, and not those obtained from breaking tests.

Where dealing with steel tubes, the specifications of the Engineering Standards Committee, based on the figures for yield points, are approved for stress calculation purposes;

for stream line wires the breaking load should be taken in preference to the yield point, which is, in these cases, ill defined.

Redundant wires, except as mentioned, are to be considered as neglected. (REPORT OF THE LOAD FACTORS SUB-COMMITTEE "SCHEDULE OF LOAD FACTORS FOR HEAVIER-THAN-AIR CRAFT" Reports and Memoranda, No. 673, 1920)

27 November 1920 : The Aeroplane - London Gazette published : Flying Branch—Flight Lt. J. A. Barron, from half-pay list (Scale B), to be seconded for duty under the Canadian Air Board, Nov. 27th

30 December 1920 : src - flight pg 1306 : In a recent issue of the Birmingham Post there appeared a very interesting interview, on the subject of the Universities and aviation, with Professor Lea, Professor of Civil Engineering at the Birmingham University. He pointed out that, after all, aeronautical engineering can only be based upon those fundamental principles which are common to all branches of engineering.

The fundamental courses provided in the Universities give this basic instruction, but even the many subjects which are included do not encompass the whole problem. There is, he said, one particular section of the subject which cannot be dealt with in an adequate manner. This relates to the determination of the external forces acting upon aeroplanes and the particular shapes which must be given to wings and bodies so as to obtain maximum lift at any particular speed, the greatest degree of suitability, and at the same time the minimum resistance to friction and other aerodynamic losses.

In this country the only places where such experiments could be carried out are the National Physical Laboratory, the R.A.F. establishment at Farnborough, and in certain of the large aircraft factories in which wind tunnels had been installed during the War.

No University, said the professor, can take up this part of the subject without installing very expensive plant and setting apart special members of the staff to carry out essential research. The whole matter seems to be one of endowment.

Agreed that none of the Universities, with the exception possibly of Oxford and Cambridge, which are not so closely interested in scientific research of the kind as the younger and more technical foundations, can afford the expense. Nor can we expect that the State should come forward to find the necessary funds.

One way and another, the question seems hedged about with difficulties. If there were in existence a great and flourishing aircraft industry, we should say without hesitation that it was the duty of that industry, from motives of self-interest alone apart from other considerations, to find the money for the research work which still remains, and will always remain, to be done. But the industry at the moment is neither great nor flourishing, and the present prospects of equipping the Universities are not encouraging. It would really seem to be a matter for private munificence—another Sir Basil Zaharoff is needed to step into the breach. If this country is to maintain its position in aeronautics, all the research work possible must be carried out, and the more experiment and research is multiplied over a number of centres the better it will be for the future of the industry - But how is it to be done ?

## Notes on “Civil Aviation”

15 DEC 1920 : The Air Ministry's Half-Yearly Report.

The Air Ministry's report on "The Progress of Civil Aviation" for the half-year April 1st, 1920, to Sept. 30th, 1920, was published on Dec. 10th, Licences to Ground Engineers.—New, 133 ; Total, 478 ; Renewals, April 1st to Sept. 30th, 1920, 90. (This is quite satisfactory.)

31 December 1920 ; Royal Aeronautical society report and discussion on Ground Engineering <sup>163</sup> : “Ground engineering is in an experimental stage and awaiting its certificate of approval”

Results of Air Ministry GROUND ENGINEERS Examinations, 1920 - UK			
License Categories applied for	Total Applications	No. Failed.	No. Passed.
A Only	156	17	139
B Only	4	2	2
C Only	161	31	130
D Only	14	2	12
A & C	45	9	36
A - C - D	20	2	18
A & B	109	33	76
A - B - C	4	4	7
C & D	121	40	81
B-C-D			
B & C			
A - B - C - D	23	15	8
	657	155	509
Total number of ground engineers licensed to 31/12/20 ... 509 The percentage of ground engineers operating <i>and “under supervision”</i> during 1920 is 26%			

The question of the certification of ground engineers is one which gives rise to several problems at the end of 1920:

1. It was suggested that under the existing conditions “it is a simple matter for a man to receive a ground engineer's certificate who had had none of the practical experience of aircraft”. Practical experience of aircraft being considered essential.
2. It was felt that a high standard of *knowledge of the art of aviation* [meaning “flying”] is more important, perhaps, than the standard of knowledge of engineers on a ship.
3. Up to now attaining practical training and experience presents difficulties.
  1. Men who have been through the shops are possibly inclined to be pedantic with shop practice,
  2. Men who have only outdoor experience are not sufficiently familiar with the best methods as applied in the shops.

<sup>163</sup> <https://archive.org/stream/journalaero25roya#page/240/mode/2up/search/air+ministry+notices>

## Notes on "Civil Aviation"

4. It would appear that if many of the fine mechanics who graduated in the Flying Corps had an opportunity of further training in workshops and vice versa, there would be a blend of knowledge which might be useful for future working.
5. *The education of future ground engineers is now receiving consideration, and opportunity is being given in universities and elsewhere for furthering his knowledge.*
6. in particular, *it is reasonable to expect that in time many valuable ground engineers will be drawn from the young men now being trained in the well-equipped establishments being set up for the Royal Air Force.*
7. The inspection of ground engineers [to ensure they are doing their work correctly] and [the quality of, and documenting of] their work is a question which is closely bound up with insurance.
8. It is well known that *the airworthy certificate was a minimum*, whereas *certification should be classified* as is done in all forms of insurance.
9. It was pointed out that a Government department *should not be the only supervisors of ground engineers* because:
  1. Government are unable to give a classification, and
  2. Government are not in a position to state, without some legal ceremony, that "one concern [business] is better than another"
  3. Government can only hold to the letter of the law and classify machines as fit to fly.
  4. Efforts have been made and conferences held with the aeronautical inspection directorate to see if a way could be found to alter this, but it had been found to be impossible.
10. It is felt that possibly a beginning could be made by the creation of a civil organisation to be a secondary source of supervision - which in due course would be run on the same lines as is done in the case of shipping. In this connection a start had been made with an aircraft register and a pilots' register at Lloyds.
11. Had the time arrived when a modest beginning might be made by the appointment of, say, one or two inspectors at terminal aerodromes, independent in their [Government] duties and responsible to Lloyds, to whom their reports would be presented? From their reports to Lloyds it would be possible to determine:
  1. the various risks represented by machines built / maintained / flown by the various organisations, and
  2. the efficiency of the various organisations staff, and
  3. the skill of the pilots employed by the various organisations.all of which would allow for the various organisations to be classified by Lloyd's.
12. Drew attention to the cases mentioned by Colonel Outram where ground engineers' work had been found to be faulty.
13. Would like to know the further remarks as to the actions taken where a ground engineers' work had been found to be faulty.
14. There is no doubt that faulty or careless work on the part of ground engineers may very reasonably lead to accidents which does considerable harm to the cause of civil aviation.

Brigadier-General R. K. Bagnall Wild : [speaking from his military point of view?]

1. As of the end of 1920, the subject of the ground engineer had not been sufficiently ventilated. [reviewed, studied, understood]
2. Technical details [on the Ground Engineer and Ground Engineering] might form a useful appendix for Colonel Outram's paper.
3. Many aircraft owners / operators / manufacturers fail to realise the extent and responsible nature of the ground engineer's work,
4. was sure a [large] number of pilots were hardly aware [clueless] of *the amount of care and attention the ground engineer gives to an aircraft*
5. Larger companies should shortly have a super-ground engineer of higher capabilities, such as "aerodrome manager", to "look after the rank and file".
6. It has been stated [both by pilots and by owners and company persons] that *apart from the safety of the public* :
  1. *"the ground engineer was an expensive luxury"*, but many also remarked that
  2. *"where the ground engineers' work has been good the money spent on them has been saved more than ten times in cost of repairs and fuel per passenger-mile alone"* .
7. Lloyds should, at an early date, start with one or two inspectors and consider the claim of any operating firm for a rebate off insurance premiums. Many firms ought to get insurance terms at *half and sometimes a quarter the present rates*, but *cannot expect this unless their ground engineers' work is sound and their advice acted on*.
8. The Air Ministry require a minimum of safety, but it is not only that minimum of safety which is being obtained at the present moment. The ground engineers, by their efficient work, *have enabled the machines to be maintained in a greater degree of flying excellence than the minimum required*.

## Notes on "Civil Aviation"

9. The operating firms have to look after their machines from hour to hour and minute to minute. This is especially important [as pointed out by Colonel Outram] during the few minutes before flight. No Government office can *guarantee the execution* of such work.
  1. It is up to the ground engineer to do his work [to the highest possible degree] and
  2. It is up to the operating firm to employ only the best ground engineers they can get, and,
  3. A "*most important obligation*" is that the operating firm must back up the ground engineer in every possible way.

Captain Goodman Crouch

remarked that Colonel Outram had dealt more with the "ground engineer" than with "ground engineering".

It was not, by any means, an easy job, and, although one could bind the ground engineers by regulations, a great deal remained with them as to adapting- an intelligent and keen way of going to work, especially as they were torn between two interests, holding their certificate from the Government and being- paid by the firm.

As a contrast to that he might mention that during the war he passed out over 500 machines, but there was no difficulty, as everyone was keen to help him. The ground engineer might find it difficult to enforce his opinion. Records obtained by ground engineers should be kept for reference. Ground engineers would like to have the information picked up at other stations. It might be useful to get to know the ordinary life between overhaul periods.

It was discovered during the war that certain small types of machine lasted 40 to 45 hours' flying without requiring overhaul, larger ones 60 hours, and still larger ones 90 or 100 hours. - information of considerable value to the ground engineer.

They were all anxious to get rid of Government control, but in this case it concerned the safety of the public. How could machines be classified into groups for different insurance premiums?

Accidents due to structural weakness were negligible.

Lieut. -Colonel Beatty

said that the Government must control all forms of public transport sufficiently to ensure the safety of the public.

The lesson learnt from the early days of railways caused such control to be adopted at the inception of civil air transport. The maintenance of the aircraft is probably the most important point to control in air traffic as far as safety is concerned, and Colonel Outram had given a clear description of the system of Government control, which consists in legal compulsion on the owner to employ responsible men of a certain standard of skill and knowledge, whose work is supervised by Government inspectors. Captain Crouch has pointed out the weak point in this system, which is using an employee of the owner as the responsible person.

The only practicable alternative scheme would be to have (Government inspectors for each machine, and such a system would undoubtedly tend to kill air transport by overmuch bureaucratic control.

Captain Acland has referred to the desirability of taking drastic action against ground engineers who do bad work.

The Secretary of State has wide powers under the Air Navigation Act, but he would be a rash man who inflicted punishment for infringement of any regulations without legal proof of such infringement. No Government department could possibly act in such a manner in England, and the difficulty of obtaining legal proof may frequently enable offenders to escape.

The active co-operation of the industry, and more especially that side of it which is concerned with insurance, will do much to strengthen the present system and to remove any cause for complaint.

Insurance provides a means of rewarding good work by reduced premiums, while punishing bad work by increased premiums or refusal to insure.

He hoped as air traffic develops we should see introduced a system of rebates on premiums where the maintenance work is really good—the ground engineer concerned receiving a share of such rebates.

Such a scheme should result in first rate maintenance with a minimum of Government supervision.

It is possible also that the industry might benefit if owners employed ground



## Notes on "Civil Aviation"

engineers recommended by the constructors of the aircraft, and he should certainly like to see the aerodrome managers of a transport firm holding licences as ground engineers and taking responsibility in questions of maintenance in special cases.

Mr. L. Woods Humphrey (communicated) :

1. I am sure that everybody in the aircraft industry appreciates the very efficient way in which the examination of ground engineers has been carried out in the past, and it is the earnest hope of all operators that the Examining Board will keep up this present standard and will gradually incline more and more towards the Board of Trade policy in respect of marine engineer certificates until it practically coincides therewith.

2. In part two, can you explain further why those applicants who applied for full licences were only finally recommended as qualified for a licence in only one category, as in many cases it is extremely desirable that a man should have a full licence, as it may save a company sending two or perhaps three men abroad for perhaps a long and expensive journey instead of only one man?

3. Your observations on the difficulties encountered by the Examination Board are only too well appreciated. The ground engineer's position is not a little an anxious one, even from the employer's point of view, as it is almost invariably necessary to use ground engineers as foremen, though one is not necessarily the other. The employer neither wants to run the risk of a crash, which may ruin his business, nor does he want to run the risk of large maintenance bills, which may equally ruin his business.

4. No mention is apparently made of the question of suspension of licence. One would not like to think that a man, having had his licence cancelled, is deprived of all chances of re-employment in his profession.

5. Last, but most important, is one perhaps not definitely applicable to the discussion of ground engineers, but nevertheless it affects them very considerably. The question of basing the depreciation, wear and condition of any aeroplane, engine or parts on the basis of the "hours" they have done in the air. Nothing could be more ruinous practically, in view of the very little experience which anybody has yet in regard to the real life of any of these things.

The Appendix 2 of your paper happens to draw my attention to the one concerning the disuse of the high compression Puma engine; it reminds one also of the Rolls-Royce. I have many figures on this subject, all of which would show without question that the high compression engine of both of these types saves from 20 to 40 per cent, in overhaul costs over the low compression. It cannot be too strongly emphasised that the very greatest care should be taken and the utmost possible evidence obtained before any notices such as the withdrawal of the engine of an aeroplane or part thereof from the approved list are issued.

I think I am right in saying that too much evidence is taken at the present from R.A.E. service experience, or from the makers; with regard to the R.A.F. experience, the conditions are, I think, sufficiently different from the commercial as to be almost incomparable. They use higher altitudes, they stunt, and they invariably run their engines on a higher percentage of their full power. Concerning the makers, I do not think it follows necessarily that they know more about their own engines than anyone else, and I am sure it will be agreed that it will be iniquitous to have a system which makes it possible for engine manufacturers, by reason of recommendation to the Air Ministry, to be in a position to enforce the operating companies to entail expenses which may amount to thousands of pounds, without the very fullest investigation from all possible points of view, and the maximum evidence being obtained and published.

General Sir Sefton Brancker

that at first sight the position of a ground engineer under present regulations is an anomalous one, for he is responsible to his own employer and to the Government, and it is conceivable that the interests of each of these authorities might clash. The

## Notes on "Civil Aviation"

20 December 1920 : Australian AIR NAVIGATION ACT assented to <sup>164</sup>.

The Australian AIR NAVIGATION ACT is to commence in relation to the several States on such dates as will be respectively fixed by Proclamation.

The object of the Act is to enable the Governor General to make regulations for the purpose of carrying out and giving effect to the Convention for the Regulation of Aerial Navigation signed in Paris on 13th October, 1919, and for the purpose of providing for the control of Air Navigation in the Commonwealth and Territories.

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<sup>164</sup> JOURNAL OF THE PARLIAMENTS OF THE EMPIRE Vol. II.- No. 1. : January, 1921

1921 : January 29 - February 26 - Air Engineer Licenses issued<sup>165</sup> to:

1. J.F Hyde, 44 Barnsdale Avenue, Hamilton, Ontario
2. H.S Quigley, 166 Balsam Ave, Toronto, Ontario
3. W.B Saunders, Tremont, King's county, Nova Scotia
4. A.W Carter, #1915 - 10A St. W. Calgary Alberta (Pilot lic as well)
5. P.J Sigalet, % Lumby P.O, British Columbia
6. T.W Siers, Union Point(% St. Agathe P.O), Manitoba
7. E.F Nicholson, 10 Glasgow St. Toronto, Ontario
8. R.K McConnell, 403 Linden Ave, Victoria, British Columbia

**18 February 1921 :** Ottawa : The Honourable Sir James Lougheed laid upon the Table : **Regulations of the Canadian Air Force, and The Air Board Act. (Sessional Papers, 1920, No. 52).** <sup>166</sup>

1921 : February 27 - March 26 - "Formal" Air Engineer Licenses issued<sup>167</sup> to:

1. H.Curtiss, % Angus P.O, Ontario
2. T.W Fletcher, 861 Retallack St. Regina, Saskatchewan
3. M. Boyes, North Regina, Saskatchewan
4. A.Tapping, Revelstoke, British Columbia
5. E.E Moore, 192 Pathenias St., Montreal, Quebec
6. H.W Hewson, P.O box 39, Clarenceville, Quebec (he was also issued a Canadian Pilot's License in the same period)
7. H.W Chaplin, 248 Saint Martin St., Montreal, Quebec
8. N.C Terry, % Mr. T.W Siers, Union Point(St. Agathe P.O), Manitoba
9. D.M.B Galbraith, Almonte, Ontario (he was also issued a Canadian Pilot's License in the same period)
10. J.L Grant, 336 Bourgeois St., Montreal, Quebec
11. J.R Robertson, Gravenhurst, Ontario
12. G.H Vasse (Esq.) % the Royal Financial Corp., Vancouver, British Columbia
13. J.J Ince, 212 - 14th Avenue W., Vancouver, British Columbia (he was also issued a Canadian Pilot's License in the same period)
14. R.W Corner, R.R #1, Kelowna, British Columbia
15. W.H Boyd, Renfrew, Ontario
16. J.Parfitt, 37 Prescott Avenue, Toronto, Ontario
17. G.C Galloway, Stonewall, Manitoba
18. C.H Hayne (Esq.), Cheltenham County, Peel, Ontario
19. H.Gittleson, 226 Rivard St., Montreal, Quebec
20. J. Wickens, Kinistino, Montreal, Quebec
21. J.E Davis, % Camp Borden, Ontario

1921 : February 27 - March 26 - Air Engineer Licenses cancelled <sup>168</sup> :

R.C Hamilton, Box 6671, Saskatoon, Saskatchewan - due to being killed in a flying accident.

G.H Simpson, % General Motors Corp., Dayton, Ohio, U.S.A - due to being killed in a flying accident. (he also held a Canadian Pilot's License)

1921 : February 27 - March 26 - "Air Harbour" licenses:

1. Issued : "Plante Aerial Service", 161 Craig St. W., Montreal, Quebec
2. Cancelled : "Canadian Aerial Services", 400 Lake of the Woods Bldg.m Montreal, Quebec

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<sup>165</sup> Aviation News, the "Canadian Air Force Journal". vol. 4 no. 1, pg 21. A.F Penton and Co. Toronto, publishers

<sup>166</sup> JOURNALS OF THE SENATE OF CANADA FIFTH SESSION OF THE THIRTEENTH PARLIAMENT 11-12 GEORGE V (1921) VOLUME LVIII , pg 25

<sup>167</sup> Aviation News, the "Canadian Air Force Journal". vol. 4 no. 2, pg 10. A.F Penton and Co. Toronto, publishers

<sup>168</sup> Aviation News, the "Canadian Air Force Journal". vol. 4 no. 2, pg 10. A.F Penton and Co. Toronto, publishers

## Notes on “Civil Aviation”

**15 March 1921 : DEPARTMENT OF PUBLIC PRINTING AND STATIONERY** <sup>169</sup> the Annual Report of the Department of Public Printing and Stationery for the year ended March 31, 1920. I have the honour to be, Your Excellency's most obedient servant, HENRY L. DRAYTON, Acting Secretary of State. March 15, 1921.

Table No. 8 —Return of Pamphlet and Miscellaneous Book-work, Year 1919-20		
Description.	Number of copies printed	Number of pages in document
Air Board of Canada - Air Administration in Canada	500	16
Air Board of Canada- Air Regulations, 1920	4625	140
Air Board of Canada- Air Regulations, 1920	5000	140
Air Board of Canada- Air Administration in Canada	4000	16

1921-1922 Air Estimates - Great Britain :

The Secretary of State for War (the Right Hon. Sir Laming Aforthington-Evans) Air estimates for 1921-22 were presented to the House of Commons and showed a total net expenditure of 18,411,000 a reduction of 4,581,230. An explanatory statement issued by the Secretary of State for Air contained the announcement that it had been decided, after consultation with the Admiralty, to suspend the Royal Air Force Airship service.

The maintenance of such a service for fighting purposes considerable expense would have involved a diminution of effort on services of which the fighting value had been more fully demonstrated. This step, it was stated, would result in considerable economies.

With a view to encouraging the development of Civil Aviation in a time of difficulty, it was proposed, with the sanction of Parliament, to devote a sum not exceeding 60,000 to the grant of subsidies to Civil Aerial Transport Companies. The total sum allocated to Civil Aviation (including meteorological services and the cost of headquarters staff) was again 1,000,000

The Secretary of State for Air\* [\* At the beginning of April Mr. Churchill was succeeded in the office of Secretary of State for Air by Captain the Right Hon. F. E. Guest, the Patronage Secretary to the Treasury.] (the Right Hon. Winston Churchill) said he pointed out two years ago that, quite apart from clearing away the gigantic debris and enormous mass of material which the War had left, it would take five years to make an efficient, self-respecting, well-disciplined, economically organised Air Force. About 18 months of those five years had gone and the progress had been much greater than he had ventured to hope.

*The training organisation of the Royal Air Force would, as it developed and perfected itself, become a great technical university for the nation, with the glamour and tradition of a gallant service super-added, without a complete training organisation they could not have my efficient force of air squadrons ; once they had that organisation it would carry a few more or a few less without any particular inconvenience or additional expense.*

The fighting squadrons and training establishments comprised 2,900 officers and about 25,000 men, with a certain number of civil assistants. *It was proposed this year to begin the formation on a very small scale of a Territorial Air Force, for which 20,000 was taken in the estimates. The idea was to have six squadrons stationed near centres where there was a large engineering population and aerodromes were available.*

Referring to the Admiralty decision to give up airships, the right hon. gentleman said that if any company would give a reasonable undertaking to operate the vessels and continue to experiment they should have all the airships as a free gift.

<sup>169</sup> 11 GEORGE V SESSIONAL PAPER No. 33 A. 1921 DEPARTMENT OF Public Printing and Stationery ANNUAL REPORT FOR THE FISCAL YEAR ENDED MARCH 31 1920

## Notes on "Civil Aviation"

Major-General the Right Hon. J. E. B. Seely (Coalition Liberal, Ilkeston) said it was an indefensible arrangement that a man should be Secretary of State for the Colonies and Secretary of State for Air at one and the same time.

Colonel J. R. P. Newman (Coalition Unionist, Finchley) moved :

*"That to promote efficiency and economy, a closer co-operation between the Air Force and civilian air services and aircraft manufacturers is essential."*

Sir W. Joynson-Hicks (Coalition Unionist, Twickenham) in seconding the amendment, pleaded for civil aviation, not merely because he thought it would be fatal to have no civil aviation lines while other countries had them, but because it would provide a reserve in personnel and on the factory sick of aviation for their military aviation when they wanted to increase it.

After debate the amendment was withdrawn, and the motion to go into Committee on the estimates was carried by 177 votes against 50. In Committee the Votes for men 30,880 of all ranks and for pay 4,794,000 were agreed to <

23rd May 1921 : the House in Committee of Supply discusses the following items : THE Air BOARD. Salaries, \$75,000 ; Contingencies, \$25,000  
Civil Aviation, \$700,000 ; Canadian Air Force, \$825,000.

### DEBATE IN HOUSE OF COMMONS.

The Minister of Militia and Defence (Hon. Hugh Guthrie stated that an Air Board was established by legislation in the Spring of 1920. Last year was practically the first year of their operations and was largely taken up with the work of organisation. The four items which appeared in this estimate fairly represented the work of the Board and the expenditure of the money. Last year they accomplished considerable work in what might be called research or exploration. The Board had established Provincial Boards throughout the Dominion, the presiding officer of these Provincial Boards being the Lieutenant-Governor of the Province. The Provincial Board met periodically and discussed the situation in regard to its own province and made recommendations to the Government. Several Provinces had agreed with the Air Board to share half the expense of all flying operations undertaken within their territory.

#### Survey.

The Board did a lot of valuable work last year in the Province of Quebec. It surveyed all the northern part of Quebec from Lake Saint John for a distance of 250 miles north, and he believed that the results obtained in two weeks' flying operations were far better than the work accomplished during five years of progress on the land. Air photographs had been taken of that territory showing the location of the lakes, the rivers, and the timber areas the photographs being distinct enough to show the burnt timber and to distinguish hard from soft wood. In many cases also they showed whether the streams were navigable or not. In British Columbia they did fire ranging. In Alberta something was being done in the exploration of the northern territory. It was hoped that during the coming season the air service would be of the greatest assistance in connection with the surveys of oil lands, etc. In addition, an air line had been mapped out across the Continent, and certain landing stations had been erected, but the policy had not been to establish such stations at the expense of the Dominion ; the municipalities desiring landing stations must establish them ; the Board located them and left it to the municipalities to decide whether they wanted landing stations established at those places. They received a very large number of aircraft from the

## Notes on "Civil Aviation"

British Government at the conclusion of the War ; he anticipated that there would have to be an appropriation for new Aircraft. They were practically operating now with machines given them.

^nti-smuggling operations.

He supposed as time went on the usefulness of the airship\* would be demonstrated. Only a few days ago they were

\*

Throughout the debate the word "airship

" was used to imply heavier-than-air craft.

asked to act for the Government of the Dominion in connection with Customs examinations at Victoria and Vancouver.

There had been a good deal of smuggling of drugs into Vancouver and Victoria, these drugs being dropped from incoming ships into the ocean and picked up by smaller vessels ; aircraft would be very satisfactorily used not only in the detection of such operations, but also in their prevention. Since their airships had taken part in the work of prevention that class of smuggling had largely ceased.

In answer to a question by Mr. Lemieux on the commercial value of aviation, the Minister said that there was no question as to its being successful as a system of transportation, but it was practically prohibitive up to the present time on account of the cost.

Mr. A. R. McMaster (Liberal, Brome, Que.) declared that the country could not afford this experimenting with civil aviation.

The Minister of Militia thought that now that they had started it would be unwise to stop at this time. He believed that in civil aviation the results already obtained justified the expenditure. Last autumn fires, which might have cost them several millions of dollars, were located through these civil air operations and promptly extinguished.

Service and Civil Aviation.

Mr. I. E. Pedlow (Liberal, Renfrew, S. Riding, Ont.) asked what service the Canadian Air Force rendered to the country. The Minister of Militia replied that they could not maintain a military or naval system of any kind if they had not an air force in connection with it. The late War demonstrated that it was absolutely impossible to operate troops without an air service. All scouting was done by the air service now ; all artillery work was directed by the air service, as well as all movements of troops.

Mr. Pedlow asked if it was not possible that either one of these branches might be dispensed with entirely and the training necessary in case of emergency made available through one of these two services.

The Minister of Militia replied that he did not think that would work out satisfactorily. The Civil Aviation Branch had charge of the training of all airmen, the granting of certificates and the prescribing of all flying conditions. Regulations were passed prescribing the law under which all flying was done in Canada. Just at the moment there was an

## Notes on "Civil Aviation"

anomaly in the conditions between Canada and the United States. Canada having become a member of the League of Nations was bound by certain general regulations applicable to all nations which became parties to the Covenant. In the meantime, they were providing their own regulations and had notified the United States authorities that their machines flying over Canada must comply with Canadian requirements, notwithstanding the fact that the United States had not become a member of the League of Nations.

Mr. Pedlow : "To what extent is Canada bound in this matter by her membership in the League of Nations ?

The Minister of Militia :

" Canada has given her assent

as a signatory to the Covenant of the League of Nations to certain general rules applicable to all members of the League and not applicable, of course, to the United States, which has not become a member."

Mr. W. D. Euler (Liberal, Waterloo, N. Riding, Ont.) :

i

"

Is there any co-operation between the two branches of the service ?

"

The Minister of Militia :

"

They are kept separate but one Board presides over them both. Their duties are, of course, separate ; one is purely military and naval."

Mr. William Duff (Liberal, Lunenburg, N.S.) thought it was an absolute waste of money to have a seaplane station at Halifax.

The Minister of Militia said that the naval service nowadays must have as an adjunct a seaplane service, and the best place for that on the eastern coast they considered to be at Halifax, and on the west coast in British Columbia. These were their two seaplane stations.

After further discussion the items were agreed to.

### "GROUND ENGINEERING".

#### PART I.

##### Introduction.

(i) The development of aircraft during the war was such that a new and reliable means of transport had come into existence before the Armistice was signed. It possessed the supreme advantage of greater speed than any other form of public transport, although the commercial possibilities of the new service had still to be proved.

A committee was formed under the chairmanship of Sir Frederick Sykes, and as a result of a series of meetings held during March and April, 1919, framed the first Air Navigation Regulations and the directions issued thereunder, which became a part of the law of the land on April 30th, 1919. In this paper I propose to deal with the sections of the regulations and directions concerning ground engineers.

Schedule 3, paragraphs 5, 7 and 8 of the "Regulations" read as follows:

—

(5) All passenger aircraft must be inspected, overhauled and certified as airworthy by competent persons appointed by the owners or users of them, and licensed for the purpose under this schedule, at such times as the Secretary of State may direct, and such certificate

or certificates must be produced to the Secretary of State on demand.

(7) No passenger aircraft carrying passengers shall on any day proceed on any journey unless it has previously been inspected at least once on that day by a competent person licensed for the purpose under this schedule, who shall not be the pilot of the particular machine.

(8) If such competent person is satisfied that the aircraft is fit in every way for the flight or flights proposed, he shall sign in duplicate a certificate to that effect, which certificate shall be countersigned by another person in the employment of the owner, giving the time and date of such certification. For this purpose the counter-signature of the pilot may be accepted."

Section IV. of the "Directions" refers to the "competent person" as a ground engineer, and details the procedure for licensing and the form of certificate they are required to render when carrying out their duties.

(2) Three years ago the title of "ground engineer" was unknown. To-day the term is familiar to very few of the general public, and its exact signification to a still smaller number. It is hoped that this paper may clear away any misunderstanding regarding this new profession; provide fuller information than is at present available for candidates desiring a licence as ground engineers; and that the discussion will assist towards our main object, the maintenance of an ever rising standard of safety in aeronautical travel.

(3) It may be well to consider at this stage why the creation of a new class of official was necessary. Every form of public transport is under some measure of Government control. The railways, although their vehicles operate only on their own property, have to conform to Board of Trade Regulations. Public transport services using the seas, the highways, and the rivers are under a larger measure of control in that not only are the members of the public who travel thereon safeguarded, but also the safety and convenience of other users.

The case of aircraft, while similar in many respects, differs fundamentally in that any other form of public service vehicle on land or sea once built in accordance with prescribed conditions and operated under certain limiting regulations only loses its measure of safety through accident, or by a slow process deterioration which can easily be detected by its behaviour and checked by occasional

external examination. It is possible by the examination of the design of any aircraft to forecast its behaviour in the air, and comparatively easily by careful and detailed inspection to ensure that it is built in accordance with such design and of the required materials. As a result we can certify that the completed aircraft is airworthy, and guarantee that no undue risk will be taken by its passengers or caused to that section of the community over which it passes in its various flights. At the first landing some small damage may be done to some important part of the structure; during the first flight some part of the controls may wear, or a single but vital nut loosen, and in consequence, the aircraft, although landing safely, without any outward indication of the trouble, may within a few hours of the issue of the certificate of airworthiness have passed into a dangerous condition. In other words, a certificate of airworthiness is valid only until the aircraft takes the air, and its validity must be maintained by repeated examination, to prove that everything is in the same condition as when the certificate was first granted. The ground engineer has been appointed to carry out these examinations. PART II. Examination of Ground Engineers.

(i) A candidate, having applied for a licence as a ground engineer, is requested to attend an examining board composed of Air Ministry inspectors. The result of this examination guides the Controller General of Civil Aviation in his decision as to whether the candidate is qualified for a licence.

It has been suggested that the examination should be in part or wholly written, but the experience gained in the last two years is rather against such a procedure, and in favour of retaining the viva voce method. When the various courses in aeronautical engineering that have now been introduced at certain colleges are in operation, their successful completion may possibly be accepted as replacing a part of the present examination.



(2) It cannot be too strongly emphasised that an examination only guarantees to weed out those who are insufficiently qualified. Alone, it cannot prove that all those that "pass" are fully qualified to discharge their important duties. An examining board, having considered a candidate's past experience, questioned him, and formed their joint opinion on his abilities, can do no more than state that in their opinion he is reasonably likely to be an efficient ground engineer. We have had examples of men who have shown brilliance at such examinations, but have developed in practice some little failure in personality which has prevented them carrying their extensive knowledge into effect. It would appear, therefore, that the only way to determine definitely whether a man is a properly qualified ground engineer is to watch him at his work, and in particular to note the results of such work.

The figures given in Appendix I. show that some preliminary elimination of the unqualified candidate by examination is essential. Since the publication of the Air Navigation Regulations in April, 1919, and up till 1st January, 1921, 164 candidates have been examined; 509 passed and 155 failed. Of the 509 who passed many had applied for a full licence, but were finally recommended as qualified only for a licence in one category, and even that endorsed to apply to but one or two types, as explained hereunder.

(2) It is seldom that any one man is called upon to cover the whole range of a ground engineer's duties, which would require knowledge of the construction of aircraft, construction of aero engines, and the operation of both the engine and the aircraft.

It has therefore been arranged to issue licences for a part of these duties, to enable men to carry out that section for which they are suitably qualified, Ground engineers' licences are divided into four main categories :

- (a) Rigging and daily maintenance of aircraft at the aerodrome.
- (b) Overhaul and construction of aircraft.
- (c) Top overhaul and daily maintenance of the engine.
- (d) Overhaul and construction of aero engines.

It was found that many candidates required licences for duties for which they were qualified, but which formed only a part of any one of these categories. For example, several candidates only required a licence to certify the overhaul of one particular type of aero engine of which they had the requisite knowledge and sufficient experience of the construction, though they knew little or nothing about other types. In such cases, therefore, it was arranged to recommend the issue of a still more limited type of licence in one category only, endorsed as being restricted to the particular type of engine or aircraft of which the candidate possessed the requisite knowledge.

(3) The examining board report on each candidate's qualifications, and from these reports one fact is most apparent. The majority of candidates may be divided into two classes. One class has a sound knowledge of aerodrome practice, a fair knowledge of ordinary workshop methods, and a surprising ignorance of the qualities of the materials from which an aircraft or aero engine is built, and even less of the many ways in which such materials may be spoilt by bad treatment and ignorance of their peculiar properties. The other class consists of men whose experience has been limited to a large extent to the construction of aircraft or aero engines, and who have gained the knowledge of materials referred to above, are expert in modern aeronautical workshop practice, but have only a very general or theoretical idea of what happens when the aircraft takes the air. Each of these classes is again subdivided into the metal-worker and the woodworker. Generally a candidate with good and sound knowledge of metal work has but an elementary knowledge of wood and non-metallic materials, or his knowledge of the latter predominates. Only a few men have shown equally sound knowledge of both branches of aircraft construction.

It has been found that in the majority of cases a candidate can be placed in one of these classes within the first few minutes. The remainder of his examination is spent in ascertaining whether his experience and knowledge in the other divisions are sufficient to warrant a recommendation.

It has also been found that the examination of a successful candidate seldom lasted more than half an hour, but on the other hand it is often necessary to prolong the examination when candidates have failed to convince the examining board of their ability.

On occasion the employers of candidates who have failed have challenged the decision, stating that the man failed was in their opinion a better man than another of their employees who had passed. In such cases inquiries have usually shown that the man may have been a better workman, but was insufficiently qualified to inspect the work of others.

The ground engineer is in many cases engaged in the first instance as a mechanic, and from his employer's point of view his qualifications as a ground engineer may be subsidiary thereto. Only his qualification as a ground engineer can be considered when deciding whether he is entitled to a licence.

### PART III.

The Supervision of Ground Engineers.

(i) As has already been mentioned in Part II., the examination of a ground engineer is only completed when his work has been watched.

This is one reason why he must be supervised, but the greatest need for supervision is that the knowledge that this exists, and is effective, provides that power behind him necessary to enable him to enforce his decisions. The best

ground engineer may be faced with the alternative of issuing a certificate for a doubtful machine or the risk of dismissal and replacement by a less conscientious man. If ever, therefore, an operator suggests that his ground engineer should grant a certificate against his inclination, the latter should be able to reply that he cannot do so, since the supervising inspector would recommend the cancellation of his licence, and any certificate would thus become invalid.

On the other hand, the simplest way for a ground engineer to carry his responsibilities is to insist upon immediate replacement of each and every part so soon as the first sign of wear became apparent. Commercial considerations, however, inevitably tend to postpone that moment, and an opposing force is required, obtained by supervision by a disinterested party.

(2) In order, therefore, to supervise the work of the ground engineer, the power of reinspection provided in paragraph 6 of Schedule 3 of the Regulations and paragraph 8 of Part I\ of the " Directions " is exercised.

It was found at an early date that it was impossible to keep in touch with each individual holder of a ground engineer's licence, since a large proportion of those who successfully obtained such licences did not operate.

It was therefore decided to arrange for periodical reinspection of all aircraft in use, and thereby supervise the work of the active ground engineers. The method adopted is as follows:

All certified aircraft must fly from licensed aerodromes.

The Air Ministry have a complete list of such aerodromes, which is kept up to date. Each is visited in turn, and the aircraft examined, the work done by the ground engineers responsible for the daily certificates for such aircraft being checked and noted.

The reports thus obtained on each ground engineer are sub-diA'ided and recorded.

It has been found that this method gives a useful record of nearly every ground engineer who is operating. Should any escape such supervision, the fact becomes apparent when they apply for renewal of their licence, and in such cases particulars of the work done are required, special arrangements being made to judge therefrom as to the man's capabilities. If the evidence of his qualification thus obtained is insufficient he may be called upon (under para. 10 of Section 4 of the " Directions ") to submit to re-examination before his licence is renewed.

The first two years supervision has shown that operators may be divided into two classes; those whose chief aim is to run a regular and reliable service; who have a number of machines in operation, and employ an organised staff of ground engineers; and the owner-operator or small syndicate with one or two machines, whose main object is to obtain the biggest return for their outlay by " joy-flying," exhibition flights, and the like, at sea coast resorts or inland holiday centres. It is appreciated that at this stage the latter class of operator is important from the point of view of the public education in flight. A man who has had one or two short flights (hiring his summer holidays is more likely to consider the possibilities of proceeding abroad by air on business than a man who has never been in the air. It is, however, this latter class of operator that requires

## Notes on "Civil Aviation"

the more careful supervision, and it is claimed that the small number of accidents which have occurred have proved that adequate and efficient supervision is possible without undue expense to the State or such a (k'grcc of State control as to seriously hamper the operator.

(3) It is of course essential that the supervising inspector should possess knowledge, ability and experience that will (M)n\ince the ground engineer concerned that the inspector knows what he is talking about, and equally the inspector must obtain the confidence of the operator (i.e., the ground engineer's employer).

The following incidents in this work of supervision may be of interest :

In one case it was found that the aircraft had sustained considerable damage owing to a bad landing. The operating company executed the necessary repairs, but having no ground engineer licensed in aeroplane construction, borrowed one from another firm. It was subsequently discovered that the ground engineer was licensed only for daily maintenance and rigging of aircraft, and had therefore contravened the Regulations by inspecting such repairs and signing up for these in the log-book.

During a visit to another aerodrome the operating company's machine was found to be in a very bad condition, despite which the ground engineer had been issuing daily certificates of safety. On the case being taken up the man's licence was cancelled by the Secretary of State.

A case was discovered of an aircraft flying without a daily certificate of safety being issued, although it was known that the operating company employed a ground engineer. It subsequently transpired that he was engaged on other work during the day, his services as a ground engineer being available only for evening flights, whereas the company operated both afternoon and evening.

In another case an operating company had employed a man who represented himself as a licensed ground engineer ; it was found that although he had applied for a licence he had never actually been examined, and had therefore assumed a position for which he was not qualified.

### PART IV.

#### The Duties of a Ground Engineer.

(i) A ground engineer is responsible for maintaining the validity of the certificate of airworthiness, and to do so is required to certify each day on which a flight is made that the aircraft is safe in every way for flight.

The experience during the past two years has been that in some cases there has been a tendency to consider such certificates as merely a piece of formality which must be fulfilled. Certificates have been signed without the ground engineer being in possession of the necessary evidence. When an aircraft has been granted an Air Ministry certificate of airworthiness, has been used in a normal manner, and is reported satisfactory by the pilot, there has been a tendency to assume that all is well, and to certify accordingly without making that careful examination of the machine and that detailed inquiry into what has happened to it since the last examination, which is essential.

The latter point is particularly emphasised. If the ground engineer constantly travelled in the machine he would know exactly what had happened to it and exactly where to look for possible signs of trouble. He could put his finger on defects which many hours of search would not reveal unless their existence was suspected.

Sometimes the ground engineer hands over the machine to the pilot and takes but little, if any, interest in what happens on its journey, although the pilot generally bases his certificate as to fitness for each flight on the ground engineer's daily certificate, and may also rely on the ground engineer to see that the petrol, oil and water in the tanks are sufficient for the proposed journey. The ground engineer is responsible for the airworthiness of the machine until the very moment when it takes the air, and the last few minutes on the ground and the first few in the air often provide evidence which should be carefully noted.

(2) Aircraft, like any other form of transport vehicle, require continuous

## Notes on "Civil Aviation"

maintenance, and the ground engineer is responsible that the machine to which the original certificate of airworthiness was granted is unaltered by such maintenance. He must also consider the conditions under which the machine

is stored ; how these are likely to affect the various parts of which the machine is composed ; he must be familiar with the deteriorating effects of different storage conditions on the various units of the machine, and if he knows that these are particularly deleterious to one especial part, must watch that part and detect the first signs of deterioration that call for its replacement.

The ground engineer must decide when it is necessary to fit a spare part, whether this be a nut or a complete component. The mere fitting of the new part is but the smallest part of this duty. He must satisfy himself that the part has been correctly made in accordance with the drawings on which the certificate of airworthiness was granted, and is of the material specified in these drawings. It must have been inspected during construction (as laid down in detail in paragraph 21 of Section 3 of the "Directions"), and he must have actual evidence that it has passed such inspection, and further, must satisfy himself that the part has not been damaged or deteriorated since such inspection was carried out. A ground engineer might possibly be excused if he failed to discover a hidden defect that had developed in a machine during flight, but there should be no possible excuse for permitting a new part to be fitted into a machine unless fully satisfied as to its history.

(3) The certificate concerning the fitness of the engines is probably one of the most difficult duties of a ground engineer. Obviously the airworthiness of the aircraft depends very largely upon the engines. No one would dream of certifying that a machine designed to use engines developing 300 h.p. each was airworthy if fitted with engines developing, say, 200 h.p. each, yet some have tried to use aircraft when the engines have lost power to such an extent that it has been almost impossible for the machine to take off with its full load. Records taken over a considerable period show that for every eight forced landings due to engine failure, one is actually due to defect in the engine itself, the remainder being directly caused by some defect in the installation of the engine. So long as the engine and the aircraft structure are designed as separate units, installation must remain a weak point of the whole machine, so that the ground engineer must give his constant attention to the daily routine of cleaning petrol filters, checking petrol flows and water connections, etc., ensuring that all ignition leads, switches and contacts are in good order. He should verify each day that the engine runs up to its proper speed, see that the oil pressure builds up and is properly maintained, and that the radiator temperature is normal. He should also make a point of inquiring of the pilot as to any sign of excessive engine vibration in the air, the flexibility of the engine and any unusual circumstances which may have characterised its running during the daily trips. His discretion must be used as to the period of running requiring a top overhaul for cleaning purposes, minor adjustments and replacements, and in due time have the engine removed for complete overhaul. No hard and fast rule can be laid down as to the period of running before top overhauls and complete overhauls should be carried out, since there is still a considerable variation in this respect, even in engines of the same design and origin.

The repairing of an engine requires on the part of the ground engineer in charge of it almost a wider and more detailed knowledge than is needed in the building-up of a new engine, in that he must determine the safe limits to which crankshafts, cylinders and the like may be reground, and the extent to which partially-worn components may be retained. A sound knowledge of materials and their heat treatment, too, is essential to justify his responsibility in the acceptance of new parts. This all-round knowledge is not easily obtainable under normal conditions of works organisation and employment. More often than not a would-be ground engineer is found to have excellent experience in the erection and testing of a particular type of engine, but for materials and heat treatment he has relied entirely, and probably quite justifiably, on another department of his works organisation. So long as he has this other department to fall back on in his supervision of the overhaul of the engine, he is safe, but it is eminently desirable that he should endeavour to improve his own knowledge, and so become self-supporting and capable of carrying through his job on his own, and without the resources of a complete works organisation, which may not always be at his disposal.

## Notes on "Civil Aviation"

(4) One result of both Service and civil experience is that various small points come into prominence which it is desirable to draw to the notice of all ground engineers. "Notices to Ground Engineers" are therefore issued. A list of these publications to date is attached as Appendix II. They are published in the technical press and are sent to all registered owners of aircraft, who are expected to pass them on to their ground engineers. To make certain that they are obtaining these "Notices," ground engineers are required to state that they are in possession of a complete and up-to-date set when applying for a renewal of their licences.

It is here urged that ground engineers and aircraft operators generally should suggest matter for such Notices. Experience with any particular type of aircraft or engine usually brings to light the little troubles to which it is particularly prone. Such experience gained by the larger Companies operating a number of machines would be of value to the owner or operator of a single machine of the same type, and in many cases to owners of machines of similar types, and could often be published as "Notices to Ground Engineers" with advantage. Occasionally particular points of weakness only become apparent after more or less prolonged use or as the result of an accident. When such cases come to light the certificates of airworthiness for all machines of the type in question are suspended until such time as the defect has been remedied. Information of such suspensions is issued as a "Notice to Ground Engineers." Once the ground engineer's attention has been drawn to a point of weakness it is sometimes possible to permit the aircraft to fly until temporary or permanent replacement has been made without taking the machine out of service.

It is an important duty of the ground engineer to pay particular attention to the terms under which certificates are thus modified, and he must adhere strictly thereto while continuing to grant the daily certificate.

(5) The insurance of aircraft is already of such importance as to call for a separate paper, and on this occasion it is only proposed to touch on one aspect, that of the relation of the ground engineer to the insuring company.

So far as the Air Navigation Regulations are concerned, the ground engineer is only required to certify that the aircraft is in every way safe for flight. The risk of insuring any aircraft is governed to a large extent by the following points, all of which have to be taken into consideration :

- (a) The design and primary standard of construction, (b) The condition of the aircraft when setting out for the flight.
- (c) The nature of the flight and the proposed load.
- (d) The skill and experience of the pilot, particularly with regard to the particular journey undertaken.
- (e) The meteorological conditions at the time of the journey.

Of these factors the second is that which concerns the ground engineer. It may often, therefore, be his duty not only to maintain that minimum standard insisted upon by his supervisors, but a higher standard which may be laid down by his employers, by the reputation for which they may obtain advantageous insurance terms.

(6) It is suggested that it may be found necessary to consider the formation of a superior grade of ground engineer. It is already probable that a large operating company would find it desirable to place their ground engineers under the control of one man who had higher technical qualifications and ability than are required for the ordinary ground engineer. Such a man would go far towards ensuring the reliability of any service and would advance the status of "ground engineering" nearer to that which must be attained if these men are to safeguard adequately the aerial transport of the future.

I must apologise for the fact that this paper is so disconnected and inconclusive, my excuse being the fact that ground engineering itself is still in an experimental stage and awaiting its certificate of approval, and in conclusion must state that the foregoing notes and remarks represent nothing but my own interpretation of the regulations and my personal views on the subjects dealt with.

They have not been in any way authorised by the Air Ministry, and must not be assumed to be in any sense official statements.

### APPENDIX I.

#### RESULT OF EXAMINATION OF GROUND ENGINEERS.

Candidates. No. Passed. No. Failed. Total Applicants

A 139 17 156

B 2 r>

## Notes on "Civil Aviation"

4

C 130 31 i6i

D 12 2 H

A B C D 8 15 23

A B 76 33 109

AC 36 9 45

C D 81 40 121

A C D 18 2 20 ABC 7 4 4 BCD

BC

Totals 509 155 664

Total number of ground engineers licensed to 31/12/20 ... 509

Per cent, operating during 1920 and under supervision ... 26%

### APPENDIX II.

#### AIR MINISTRY NOTICES TO GROUND ENGINEERS.

No. 1-Explanatory Statement.

No. 2-Petrol-Resisting Rubber T'ul)ing and Connections.

No. 3-Streamline Wires.

No. 4-Safety Belts and Harness.

No. 5-Control Pulleys and Running Cables.

No. 6-Arrangement of Oil Filter on Aeroplanes fitted with Napier " Lion " Engine.

No. 7.—Avro 504 and 536 type machines : Upper Shoe Fitting for Engine Diagonal Strut (Part too).

No. 8.—Fitting of Ballast in Aircraft.

No. 9.—Defects in Aircraft Timber.

No. 10.— Foreign Matter in Petrol Systems.

No. II.— Strength of Control Cables.

No. 12.—Avro 504 and 536 type machines: 1^ ppcr Shoe Fitting for Engine Diagonal Strut (Part 100).

No. F3.—Handley Page 0/400 Tail IMane Fittings.

No. 14.— 120 h.p. and 160 h.p. Beardmore Engines, Water Pipe, Part No. 1 1358/12 B, Connecting the Top Water Rail with the Carburettor Jacket.

No. 15.—Siddley " Puma " Engines: Disuse of High Compression Pistons.

No. 16.—Renewals of Licences : Complete Sets of Notices Necessary.

No. 17.—Air Navigation Directions Amendments : Authorised Patterns of Log Books to be used.

### DISCUSSION.

The Chairman said it was a pleasure to the layman to read Colonel Outram's paper, which, though technical, was written in untechnical language. It dealt with another form of Government control. They had got so used to Government control that one almost forgot that before the war they had practically none of it. As long as it was directed to something which was thoroughly understood he did not think anyone objected to it, provided it was effective. If it was not one was restive under it. As an example of inefficient Government control he mentioned that some years before the war, when there was plague in India, a system of plague inspection was instituted at Port Said. All the first class passengers were fetched out of bed at six o'clock in the morning, filed in front of a doctor and went back to their beds. It annoyed them very much, as any of them might have been bad with the plague and the doctor would not have noticed it as he did not know their usual appearance. That made them restive and it would be the same with this ground work unless the pilots knew that the inspection was done well and that their safety was insured by it. An inspector who ordered the alteration of controls might be making himself a nuisance, but the pilots would come to respect him, as they would see he was not there just for the fun of the thing. Colonel Outram would be glad to have constructive criticism, and he thought any criticism was likely to be constructive, as the whole thing was so new. Captain P. D. Acland congratulated Colonel Outram on the able manner in which he had dealt with a very difficult subject and on the clear way in which he explained the steps being taken to put in motion the new duties called for under post-war civil aviation.

He stated that he had discussed the whole of this question with his own pilots

## Notes on "Civil Aviation"

and engineers at his works, and they all agreed that the work to be undertaken in this new profession was of prime importance. If machines were going to be kept in good order regularity of service is very materially assisted, for after all, if machines cannot fly safely the rest of the organisation would go for naught. In this connection he felt that the actual constructors were bound up with the transport companies at the present time owing to the fact that in the present stage of development the closest liaison between designers and operators was essential if useful types of commercial aircraft are to be evolved. The question of the certification of ground engineers is one which gives rise to several problems.

It is suggested that under existing conditions it is a simple matter for a man to receive a ground engineer's certificate who had had none of the practical experience of aircraft which is considered essential.

It is felt that a high standard of knowledge of the art of aviation—that is flying—is more important, perhaps, than that of engineers on a ship. Up to the present, to attain practical training and experience presents difficulties, for men who have been through the shops are possibly inclined to be pedantic with shop practice, and those with only outdoor experience are not sufficiently familiar with the best methods as applied in the shops.

It would appear that if many of the fine mechanics who graduated in the Flying Corps had an opportunity of further training in workshops and vice versa, there would be a blend of knowledge which might be useful for future working. The education of future ground engineers

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07 January 1921 : The Monetary Times : Growth and Possibilities of Aviation Insurance

By HEDLEY C. WRIGHT  
Assistant Manager for Canada, London Guarantee and Accident Co., Ltd. presented before the Insurance Institute of Toronto.

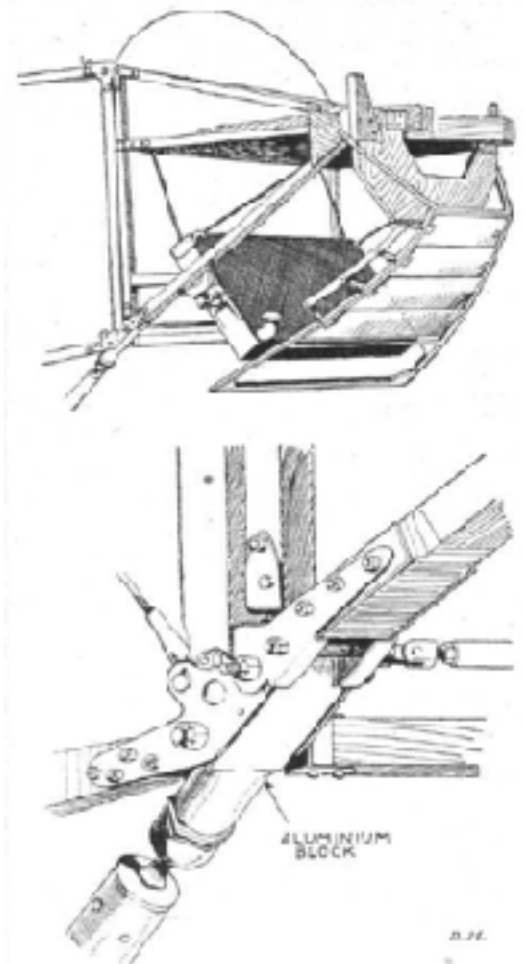
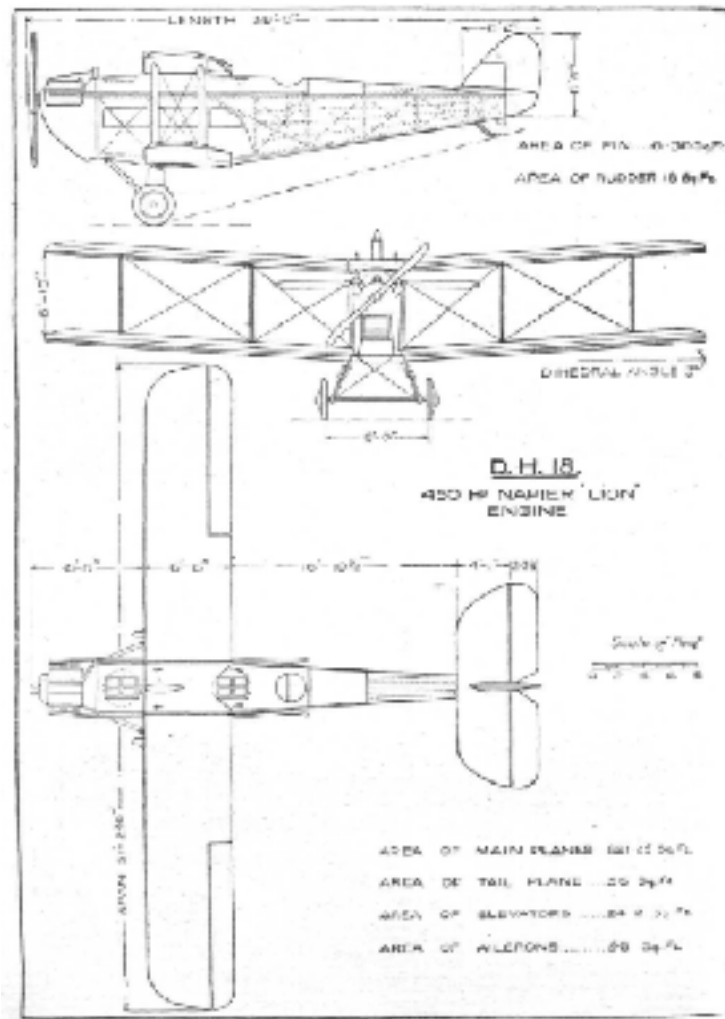
THE business of Aviation Insurance did not take definite form until the spring of 1919, and our study of it will be interesting, not so much because of what it has been or of what it is, but rather because of what it is likely to become. It was only in 1909 that Bleriot made the first flight across the English Channel and only a few months back the first trans-Atlantic flight was made.

Between the time of the first channel flight and the outbreak of war, flying scarcely went beyond the experimental stages. Then on the outbreak of war it received an unparalleled impetus. Neither men or money were spared in its development; but it was all for war purposes. Since the armistice much attention has been given to the question of civil flying, which to-day is still but an infant in swaddling clothes. In the few moments at our disposal we will attempt to take a look into the future and see what justification there is for hoping that in the fullness of time the infant will grow into sturdy manhood.

Good Field in Canada

The commercial growth and prosperity of a country necessarily depend upon the means of transportation at that country's disposal. It is stated by those closely in touch with aeronautics that aviation can be wisely developed so that it becomes an efficient means of transportation. And the possibilities





of commercial aviation seem to be more bright in Canada than in many other countries, such as for example in the British Isles, where up to the present more has been done than here to develop the business. There the short distances, the completeness of railway transportation and prevalence of fog tend to limit air transport; but in Canada conditions are different. The big distances between our commercial centres, the vast areas still to be surveyed and developed, the clear atmosphere and the broad inland waterways, lending themselves admirably to the use of flying boats, all invite the peaceful conquest of the air.

Up to the present, commercial aviation has not taken really profitable or tangible shape anywhere, and possibly it is less developed in Canada than in most of the other countries where it has been receiving attention. Amongst the aerial activities on this continent to date may be mentioned:

1. The carrying of passengers for joy rides. It is reasonable to assume that the next development will be the carrying of business men as a time saver, as is being done by regular aerial passenger lines in Europe.
2. Photographic and survey work.
3. Mail carrying.
4. Carrying small cargoes of goods.

#### Conclusions of Air Conference

Governments are recognizing the need for encouraging flying, and only the other week Mr. Winston Churchill, the Imperial Secretary for War, announced at the Air Conference



in London that the Imperial Government intended to help civil aviation by every means in their power. It is interesting to know in passing that the Air Conference in question came to two important conclusions. The first was that the state which first makes aviation pay commercially will win in the next war. And here it may be noted that Marshall Foch is reported to have stated that the next war will begin with a great battle in the air, and the side which wins that battle and gains control of the air will have a lasting advantage over the other side. It is further believed that in war time what the mercantile marine is to the navy, civil air fleets will be to the Royal Air Force.

The second conclusion of the Air Conference was that commercial aviation in Great Britain, where the matter has been receiving considerable attention, is at present far from being a paying business. This being the case, we in Canada must not expect too great results too soon.

The convention dealing with international air navigation matters will shortly come into being among all the allied states. The text of this convention was adopted by the Supreme Council of the Peace Conference in September, 1919, and defines the law on nationality marks, certificates of navigation, licenses for air pilots, aerial signalling, etc. The problem of custom duties has been based on the principle of the sovereign rights of all states to the atmosphere over their respective territories.

### Air Board in Canada

The Canadian government is alive to the situation and has created an Air Board, whose functions are to supervise all matters connected with aeronautics. The Air Regulations, 1920, issued by the board provide amongst other things for:

—

1. The examination and licensing of all pilots.
2. The inspection, licensing and regulating of all aircraft, aerodromes and air stations.
3. The prescribing of aerial routes.
4. The undertaking of such technical research as may be required to develop aeronautics.
5. The control and management of all aircraft and equipment necessary for the conduct of any of His Majesty's services.

### Insurance Will be Required

Now as regards the insurance of aircraft. I need not remind this gathering that the credit system of a country depends upon insurance. And insurance on aircraft is naturally essential to the success of commercial aviation; for, without insurance facilities, men will not risk their capital, pilots will not risk their limbs, passengers will not risk their lives, and merchants will not risk their goods in schemes of air transportation.

As far as I know there are at the present time two American companies and one British company prepared to write fire casualty aviation insurance in Canada-, and we will now briefly examine the coverings obtainable and the approximate premiums charged.

1. Public Liability.—Taking care of all claims in excess

of the first \$50 against owners of aircraft for accidental bodily injury caused by the aircraft to any person other than an employee of the assured or passengers. Limits of 5 and 10. Premium \$100.

2. Property Damage.—Providing for all claims in excess of the first \$50 for destruction of or damage to property not owned or controlled by the assured or conveyed by the aircraft of the assured. Rate 5 per cent.

3. Collision Insurance.—Covering damages to the aircraft and necessary accessories whilst in or on the same, as the direct result of accidental collision or impact with any object while the aircraft is in the air or on land or water under its own power. The first 20 per cent, of any loss or damage to the aircraft and also loss or damage to propeller and under-carriage are excluded. Rate 12 1/2 per cent.

4. Fire Insurance.—Covering loss or damage in excess of the first 10 per cent, caused (1) by fire, explosion, self ignition or lightning to the aircraft of the assured or to accessories whilst in or on the aircraft; (2) while being transported in any conveyance by land or water. Rate 4 per cent.

It may be of interest, while on the subject of fire hazard, to mention that following a crash a number of fires have been caused through heated parts of the engine coming into contact with gasoline vapour. At the present time an aeroplane on the ground is a much more hazardous fire risk than an automobile, because in the case of an aeroplane there is very little chance of putting a fire out when it really has a start, particularly if the tanks are full. This means that the salvage is negligible.

5. Theft Insurance.—Covering the assured against loss or damage in excess of the first 10 per cent, to the aircraft by burglary, theft, robbery or pilferage by any person or persons other than employees of the assured. Rate 1 per cent.

The purpose of the various deductions is, of course, to impress upon the assured the fact that he is a co-insurer and to encourage him to exercise care.

For Six-Months' Term

The term of the policy is for six months covering the principal flying period in Canada up to the present. It is considered wise in any event to limit the term of the policy to six months. Aeroplanes are subject to considerable and rapid deterioration, and it is wise to have an opportunity of inspecting them before renewing the insurance.

Cargo insurance may also be obtained at an average rate of one quarter of one per cent.

Personal accident insurance on pilots and passengers is also purchasable either by means of a coupon policy covering from sunrise i.o sunset or by a policy for a longer term.

The coupon rates for \$5,000 for accidental death and \$25 per week for 26 weeks for total disability and \$12.50 per week for partial disability for 26 weeks are \$10 for a pilot and \$5 for a passenger. A policy on a pilot on an annual basis is purchasable at the rate of approximately 10 per cent, on the amount of the principal sum insured.

The commission payable on all classes of aviation insurance is 10 per cent.

#### Attitude of Life Companies

As regards life insurance, the life companies in Canada have, I understand, discussed the situation from time to time, but they find difficulty, owing to the experimental nature of the business and the lack of adequate statistics, in arriving at a premium charge for life policies for aviators, and up to the present time the business is not being sought by the life companies.

The rule of one of the large life companies is:

—  
"No amateurs or aviators engaged in fancy or exhibition performances will be accepted. Experienced aviators engaged in commercial or patrol work as pilots, or persons engaged in similar work as passengers, will be accepted for a maximum amount of \$2,000 on any plan, except term insurance, subject to a minimum extra premium of \$50 per \$1,000. The extra will vary, according to the degree of hazard involved."

It would be helpful to the development of commercial aviation if the life companies could see their way clear to institute a class for aviators and pending the experimental stages of the business arrange a pool or in some other way work out a scheme which will enable them to encourage the development of aviation at not too great a cost to themselves.

In underwriting aviation business, it is already recognized that many things must be taken into consideration, and undoubtedly there are many more which will be learned only by experience as the business develops. Here are some of the things to be taken into consideration:—

1. Record of the firm who owns the machines—from knowledge of the company's record and personnel can be judged the spirit of its organization and whether the ground engineers are capable and careful at their work. Carelessness with aeroplanes spells disaster.
2. Types of machine and engine.—The reliability of the machine or engine can be judged from its past records, or in the case of a new type from the previous work of the designer.
3. Record and standing of pilots.—A great percentage of the risk depends upon the pilot. He has control of the aeroplane, and no matter how good the machine may be, it can come to grief easily under the guidance of a bad pilot.
4. Nature of flying being carried out.—This needs no explanation. Obviously a higher rate must be charged for a machine flying from Toronto to Calgary than for one flying from Toronto to Hamilton. Again, a machine engaged in photographic or survey work and flying away from a recognized air route is a far more serious hazard than that of a machine travelling on a regular air route and simply carrying passengers.

It is customary to exclude covering an aircraft while it is flying between one hour after sunset and one hour before sunrise of any day.

The rating of cargo is affected by methods used in packing, whether it is easily damageable, the effect upon it through exposure to atmospheric conditions, and so on.

Past Experience

## Notes on "Civil Aviation"

As already stated, it is difficult to secure statistics at this time. It may, however, be of interest to give a few figures which have been published on American and British civil aviation experience. The American experience for the year ending May, 1919, and derived from reports of the Washington, Philadelphia and New York postal service, supplies the following particulars:

Number of flights projected 1,263

Number of flights accomplished 1,208

Total mileage flown 128,255

Number of parcels carried 193,021

Total expenses in dollars 137,900

Forced descents, due to Miiotor 37

Forced descents, due to weather 53

Deaths 2

Accidents to persons • 6

Total loss of machine 2

Other losses 3

It is of interest to compare the experience of British civil aviation, as given out by the British Air Ministry, covering a period of six months: October, 1919, to March, 1920:

—  
Number of flights 21,000

Hours of flight 4,000

Passengers carried 52,000

Total mileage flown 303,000

Accidents 13

Deaths 2

Pilots killed 2

Pilots njured 6

Passengers injured 10

Passengers killed 1 in 10,000

The results of the "Paris-London" express route over a period of fourteen weeks were as follows:

—  
Flights projected 213

Flights accomplished 177

Flights abandoned 19

Flights internapted 12

Total miles flown 48,090

Average speed per hour 104

The Handley-Pajre Sei-vice, operating between London and Paris and London and Brussels, in November, 1919, carried 154 passengers and 19,900 pounds weight of parcels.

It is probable that more authentic and extensive statistics will in due course be obtainable from the Canadian Air Board.

Air Tossibilities Deserve Attention

On the whole, I am persuaded that the aviation situation in Canada gives us cause for sane optimism rather than pessimism. Given reasonable support from the government, the public and the insurance companies, it should be a means of assisting materially in the development of the Dominion during the next twenty-five years. In some respects, perhaps, other countries are giving the matter more energetic attention than ourselves. It may not be out of place here to call attention to the size of the Zeppelin, L. 71, which was recently surrendered by Germany to Great Britain. It is 745

## Notes on "Civil Aviation"

feet long and has a maximum speed of 75 miles per hour, and is equipped with engines of 2,100 horse-power. When flying at 45 miles per hour it is capable of remaining aloft for as long as a week and of traversing a distance of 8,000 miles. In the light of this, who can tell where the next progressive step will lead, or measure the magnitude of the future of aviation?

Finally, I am confident that no Canadian will neglect any opportunity to make Canada greater, commercially, by means of aviation, and that no Britisher will fail to do his share in making the Empire invincible in the air, as on the sea, in all righteous causes.

07 January 1921 : Waterloo, Ontario : THE MUTUAL LIFE ASSURANCE CO. OF CANADA - life insurance policies impose no restriction on account of residence, travel or occupation - *excepting military or aeronautic service.*

14 January 1921 : Sir Frank Baillie, one of Toronto's best known citizens and well-known throughout the Dominion, died in the Wellesley Hospital, Toronto, last week. The late Sir Frank Baillie, K.C.B.E., was president of the Canadian Aeroplanes, Limited, Toronto; president of the Canadian Cartridge Company, Limited, Hamilton, and president of the Burlington Steel Company, Limited, Hamilton. src ref : monetary times 1921 - january : Trade Review and Insurance Chronicle of Canada

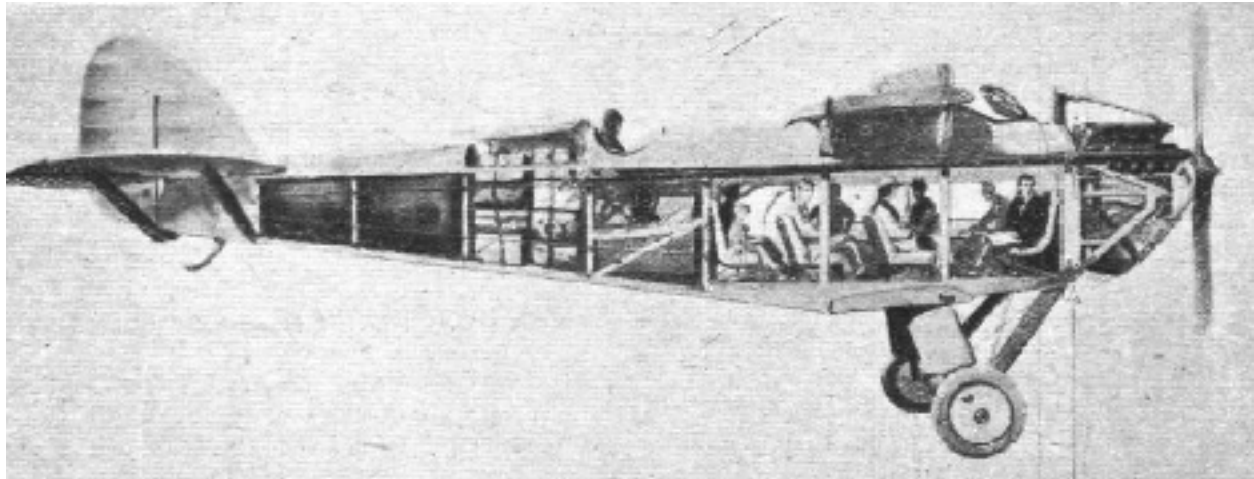
Address : Corner Church and Court Streets, Toronto, Ontario, Canada.

Telephone: Main 7404, Branch Exchange connecting all departments.

Cable Address: "Montimes, Toronto."

Winnipeg Office: 1206 McArthur Building. Telephone Main 3409.

G. W. Goodall, Western Manager.



January 1921 : 171 Lic. Pilots, 109 registered aircraft.

1921 : Construction of the first Kinner Aero-engine.

January 1921 : Charles Anderson Boston presents the American Bar Association Special Committee report into the

## Notes on "Civil Aviation"

Laws of Aviation from around the world.<sup>170</sup>

31 March 1921 : UK : Ministry of Munitions ceases operations.

31 March 1921 : UK : The Ministry of Munitions - A.I.D becomes a department of the Air Ministry. Civil aviation began, at first using modified versions of redundant wartime aircraft. Civil aircraft designed as such soon followed. The AID then took on a new responsibility, inspecting them for airworthiness and licensing Ground Engineers until the Air Registration Board was formed in 1937. (Flight International Sept 1963)

Early 1921 : All domestic (Private) British Air Lines cease to operate in UK due to costs, forcing Government to step in to continue to provide ongoing passenger air service.

July 1921 : Ernest L. Janney arrested (where?) brought to Lethbridge, and charged with fraud arising from bouncing cheques.

A. Ernest L. Janney then went on a hunger strike to protest jail conditions.

B. This became big news and brought forward more people—from Edmonton to Michigan—who remembered "Captain Janney", earlier business dealings, unpaid bills and bad cheques.

09 September 1921 : Richmond Kentucky : Capt. Ernest L. Janney an Ex-British officer entered his 33rd day of hunger strike to protest his arrest, he is charged with obtaining money under false pretences - src - The Richmond (Richmond, Madison County, Ky) Daily Register No. 215 (56th Year)

30 September 1921 : Ernest L. Janney convicted of fraud and sentenced to two years in the Penitentiary at Prince Albert, Sask.

1924 : Ernest L. Janney mentioned in the aviation press, reportedly flying in the U.S. and planning an air service in British Guyana.

1927 : Ernest L. Janney acquired a Canadian commercial pilot's license—the first ever flying certificate issued to him.

1927 : Ernest L. Janney chartered "Janney Transatlantic Flights Limited": "to purchase an aeroplane or aeroplanes and finance a flight or flights across the Atlantic or elsewhere." This was to be financed with 1,600 shares of stock at \$25 each. The venture was cancelled when two Canadian pilots vanished over the Atlantic the same month his company was created.

25 January 1921 : Airco DH.4 "O-BAIN" (Belgium) crashes near the Valiant Sailor pub at Dover Road, Folkestone.

24 January 1921 : Air Supremacy <sup>171</sup>

MAJOR GENERAL SEELY, British Under Secretary of State for Air recently made the claim that "England's claim to air supremacy cannot be gainsaid by any other power," He is further quoted as having stated: "Our peculiar position demanded it. and it was essential to our far-flung Empire to have both air and sea supremacy. Marshal Foch -said that the next war would lie in the air. because it will be swift, secret and most deadly."

Just what "supremacy in the air" means in *the present confused state of aeronautical opinion* is difficult to determine.

If it means airplanes in service the conclusion is incorrect as practically all airplanes now in the service of all countries would be obsolete the day war was declared. Every country has advanced types that are now in the experimental stages which will render present aircraft valueless against them. If General Seely means the forces now available in the permanent Air Service organisation, the basis will be deceptive for the reserve power of each country in the form of ex-service fliers will for several years at least be a real factor in determining a country's air strength.

It would be interesting if the Chief of the US Air Service would give to the public a comparative estimate of the present air power.

It might surprise some of our foreign friends to learn the situation.

24 January 1921 : US Aircraft Flying to Canada THE Canadian Air Regulations of 1920 <sup>172</sup> provide:

1. that airplanes entering Canada must be registered in the United States;
2. that their pilots must be duly qualified military pilots and
3. that they must not carry passengers for hire between points both of which are in Canada.

Since all Air Service officers must obtain authority to fly outside the limits of the United State's before embarking upon a flight, it is believed that the infringement of the laws referred to comes from civilian fliers, who, no doubt, may not be

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<sup>170</sup> Report of the Special Committee on the Law of Aviation By Charles Anderson Boston, 1921

<sup>171</sup> AVIATION AND AIRCRAFT JOURNAL Vol. X No. 4

<sup>172</sup> AVIATION AND AIRCRAFT JOURNAL Vol. X No. 4

## Notes on "Civil Aviation"

aware of the Canadian air regulations.

Under present legislation:

1. There is no governmental agency in the United States charged with the control of aerial navigation
2. There is no means in existence for promulgating regulatory information to Civilian aviators except through aeronautical publications and the newspapers.

It is fortunate that the Canadian authorities have been so tolerant of the lax control of flying in the United States. There is no doubt that if this condition continues much longer many delicate questions will arise which may prove embarrassing to both countries.

24 January 1921 : Advertisement : Moose Factory To Cochrane In 2 Hours! Instead of 3 the weeks of hardships experienced by the Navy Balloonists.

Last July the Canadian Government sent an expedition to make aerial photographs and surveys of the territory lying between Cochrane, the northernmost railhead, and the Hudson Bay.

This expedition had at its disposal the best aircraft produced by any of the Allied Powers, but finally selected for this perilous trip a U. S. Navy HS-2 Coast Patrol Flying Boat.

They flew from Toronto to Cochrane over the northern wilderness, and then made eight trips from Cochrane to Moose Factory. Mattice. James Bay and Hudson Bay.

The flying time from Cochrane to Moose Factory was two hours—a trip that requires from three to six weeks by dog sled and canoe.

Although they flew thousands of miles, the perfect performance of this Navy HS-2 Flying Boat fully justified these experts in their selection of it as the type of aircraft best fitted to meet such a rigid test. All over the country individuals and corporations are making big profits operating flying boats for passenger carrying, sight-seeing, aerial photography and other purposes.

This opportunity to buy one of these brand new, thoroughly reliable boats enables men of vision to start an aerial transportation company and purchase their equipment now, at one-third of what it can be purchased for later.

There are numerous points where aviators have made \$500 to \$1000 per week in passenger carrying in two and three seat machines. With one of these six seat boats the profit opportunity is doubled.

Write for our easy payment plan.

Un-converted boat: \$6160.

Open cockpit six seat boat: \$6500.

Enclosed cabin "de-luxe" six seat "flying limousine": \$9000.

Aeromarine Navy HS2L Open Cockpit—Model- 83 PRICE \$6500. IMMEDIATE DELIVERY

This is the celebrated HS2L Navy Coast Patrol Flying Boat converted to meet the requirements of aerial photography, forest patrol, timber scouting, surveying and mapping, locating schools of fish for commercial fisheries, fire patrol, etc. Opposite is described remarkable feats of this particular model. To encourage commercial aviation the U. S. Government has chosen The Aeromarine Engineering & Sales Company as a channel through which you may be allowed to purchase these beautiful boats at less than one third of what it cost to build them. Aeromarine Service Includes the training of Pilots and Mechanics - Aeromarine Engineering and Sales Co., Inc. # 1800 - TIMES BUILDING, New York, Ny

24 January 1921 : U.S General Nivelle Sees Two Miles of Aero-Planes at Kelly Field

When the first sentry at Kelly Field saluted Gen. Robert Georges Nivelle word was passed to the waiting airmen. As General Nivelle's car rounded Hangar No. 1. he saw a line of ships that stood wing to wing from Hangar No. 1 to No. 24. A line of S.E.5's, DeHaviland's, Fokkers, Spads, Curtiss JN-6-H's, Capronis and Handley Pages, every 'plane in working order with its crew and pilot lined up in front.

The General rode down the entire line. When he returned to the reviewing stand the word of command was given and the big line of pilots and mechanics simultaneously broke, and from Hangar No. 1 the bark of a single S.E.5 was the signal for the entire line of ships to "come to life," and they did. Three minutes later there was not a single dead engine on the line, and the First Pursuit Formation was already out on the field ready to take off. They were followed by three other S.E.5 formations; then the DeHaviland's rounded off.

The formation circled the field and passed over the reviewing stand. The highest formation was 2000 feet; the lowest 500.

After the exhibition, a tea was given at the Aviation Club in honor of the General.

27 January 1921 : Shorts Sliver Streak flown 2nd time.

February 1921 : Shorts Sliver Streak flown from the Isle of Grain to the Royal Aircraft Establishment at Farnborough. During the flight the aircraft cruised at over 120 mph (193 km/h). At Farnborough, the Silver Streak received the Air Ministry serial number



## Notes on "Civil Aviation"

J6854. Very limited test flights were performed through June 1921. RAE Testing revealed the aircraft could climb to 10,000 ft (3,048 m) in just 11 minutes and had a top speed in excess of 125 mph (201 km/h). Pilots noted the Silver Streak's quick acceleration, steadiness in the air, and ease of control. ("The Olympia 1920 Aero Show" *Flight* (22 July 1920) "Air Ministry Acquire Short 'Silver Streak'" *Flight* (24 February 1921) "Short Bros. and Metal Construction" *Flight* (11 December 1924)

February 1921 : the Birmingham Small Arms Company (BSA)'s Daimler Company purchases Airco subsidiary Aircraft Transport and Travel (Air Express) from Frank Searle to form what became Daimler Airway. Searle remained managing director, Major George E Woods Humphery, an engineer and a former RFC pilot and general manager of Handley-Page Transport from June 1919, was appointed manager of Daimler Airway.

16 March 1921 : CANADIAN AIR BOARD questions in Parliament - Ottawa, Canada <sup>173</sup>:

Mr. PROULX: Laurier Liberal :

1. What are the names of the members of the Canadian Air Board and the Canadian Air Force Association?
2. How many departments have been created in the Air Board and Air Force, and what are they?
3. What salaries are being paid to the heads of departments?
4. Is it correct that the amount of salaries for heads of departments is partly dependent upon the number of employees they have?
5. Is it correct that the heads of departments get a raise of as much as \$1,000 a year when they have 30 employees or over in their departments?
6. How many departments have 30 employees or over, and in these are so many really required?
7. Who is responsible for saying what number of employees are required in each department?
8. (a) Who is the responsible head of the Air Board, and (b) is he engaged on the work as much as he should be?
9. Why is the pay of certain officers and appointments in the Air Force reduced after they have served a certain length of time?
10. What measures, if any, are being taken to enforce the O.T.A. in the vicinity of Camp Borden ?
11. If a man enlists in the Canadian Air Force as a mechanic, how much of his time is employed in actual work on aero engines and aeroplanes, and how much time on fatigues and useless squad drill by incompetent instructors?
12. Are Air Board employees authorized to carry unofficial passengers when flying aeroplanes?
13. Is it permissible to use Government aircraft on joy rides with lady passengers?
14. What has happened to the flying boat used on the trans-Canada flight, which was last heard of as lying in the Red river at Winnipeg? Is it still unnecessarily exposed to the rigours of winter storms and weather?

Hon. Mr. GUTHRIE: (Solicitor General of Canada; Minister of Militia and Defence) Unionist <sup>174</sup>:

1. The names of the members of the Canadian Air Board and the Board of Management of the Canadian Air Force Association are as follows: Honourable Hugh Guthrie, K.C.; O. M. Biggar, Esq., K.C.; Air Vice-Marshal Sir Willoughby Gwatkin, K.C.M.G., C.B., etc.; Captain W. Hose, C. B.E., R.C.N.; Lieut.-Colonel R. Leckie, D. S.O., D.S.C., D.F.C.; Lieut.-Colonel J. Stanley Scott, M.C., A.F.C.; E. Deville, LL.D., D.T.S.
2. and
3. The administrative duties in the Air Board are distributed under the following officers, whose salaries are as stated: Inspector General, C.A.F., \$4,180; Director of Flying Operations, \$4,500; Controller of Civil Aviation, \$3,500; Technical Director, \$4,500; Director of Equipment, \$2,400; Secretary, \$4,250.
4. No.
5. No.
6. None.
7. The Civil Service Commission in consultation with the Air Board.
8. (a) The chairman, Hon. Hugh Guthrie, K.C. (b) Yes.
9. The Canadian Air Force is organized as a *non-professional force*, the personnel of which in all ranks from the lowest to the highest undergoes normally one month's training every two years. Certain staff and administrative duties require for their performance a longer term, normally six to nine months, and to secure the services of competent officers and other instructional personnel for these duties which involve absence by the personnel performing them from their ordinary civil occupations for substantial lengths of time, special rates of pay are provided. These special rates do not apply if the service of any individual is prolonged beyond one year, and the pay receivable is reduced accordingly.
10. Under the Canadian Air Force Regulations "No officer or airman shall bring into or have in his possession in any barrack or camp intoxicating liquor." This regulation is being strictly enforced. There have been fourteen arrests made for breach of the

<sup>173</sup> [http://www.lipad.ca/search/?q=Air+Engineers%27&pol=&par=&sd\\_year=1920&sd\\_month=1&sd\\_day=1&ed\\_year=1936&ed\\_month=1&ed\\_day=1&sb=on&so=on](http://www.lipad.ca/search/?q=Air+Engineers%27&pol=&par=&sd_year=1920&sd_month=1&sd_day=1&ed_year=1936&ed_month=1&ed_day=1&sb=on&so=on)

<sup>174</sup> [http://www.lipad.ca/search/?q=Air+Engineers%27&pol=&par=&sd\\_year=1920&sd\\_month=1&sd\\_day=1&ed\\_year=1936&ed\\_month=1&ed\\_day=1&sb=on&so=on](http://www.lipad.ca/search/?q=Air+Engineers%27&pol=&par=&sd_year=1920&sd_month=1&sd_day=1&ed_year=1936&ed_month=1&ed_day=1&sb=on&so=on)



## Notes on "Civil Aviation"

Ontario Temperance Act, of whom seven were civilians and were dealt with by the local civil authorities. The fines collected in these cases totalled \$1,150.

11. The approximate weekly time-table for an air mechanic in training is as follows: Lectures on engines, theory of flight, rigging and construction of aeroplanes, 24 hours; work in shops and on machines being flown, 20 hours; other military duties guards, drills, etc., 16 hours.

12. No.

13. No.

14. It has since November 21st been safely housed on the shores of the Red river, and has never been exposed to the rigours of winter storms and weather either unnecessarily, or at all

02 May 1921 : CIVIL SERVICE ACT, 1918, AMENDMENT - Parliament - Ottawa, Ontario

Alexander Kenneth Maclean (Halifax) Unionist: Mr. Speaker, I am sorry that on Friday last I was out of the House when the motion for the second reading of this Bill was moved by the Government. Had I been present I certainly would have protested against the procedure adopted from the beginning to the end. I think it is most peculiar. Nobody could help but be suspicious of the motive and purpose behind the Bill, particularly by reason of the manner in which it has been presented to the House. There has been an absolute absence of candour or frankness in the explanation upon the first reading of the Bill or upon the second reading. The purpose of the legislation has not been disclosed at all, in fact any explanation has been evaded, and apparently every step taken has been with the view of preventing the House gaining any knowledge of that purpose.

I do not say that I am right in that assertion, that will be for members of the Government to state themselves, but I do say that the procedure adopted in presenting such an important measure to the House is open to serious criticism indeed. In the first place, the Bill was introduced in blank when the first reading was moved. On Friday last, before the second reading, a committee was appointed without an opportunity being given by the House to hear from the Government as to the purpose and provisions of the measure or to express its opinion on the principle involved. In that respect the procedure has been most unusual. It might naturally have been expected that upon the second reading at least some explanation would have been forthcoming. I say that for the reason that the Bill affects fundamentally the main provisions of an Act which, after great deliberation Parliament adopted three years ago. That Act is difficult to understand at best, and most members, I fancy, have never given to it that direct study which would enable them to understand the importance of its main provisions, to say nothing of its many subsidiary clauses. I would not object to a Bill being sent to a committee without a full discussion of its principal provisions, if the legislation being amended were well known to the House and if the amendments were of a trivial or unsubstantial character. But the Bill before us for consideration is extremely important. It is a reversal of every principle of importance contained in the Civil Service Act of 1918, it is a reversal of public policy as declared in the elections of 1917, and it is not a Bill that the Government should have contemplated sending to a committee without full and ample discussion in the House. It is a Bill that cannot be properly, effectively and intelligently considered by any committee until the House has decided whether as a matter of principle they intend to revert to the patronage system as it prevailed prior to 1918. And that is the purpose of this Bill—a clear-cut, definite reversion to the practice of political patronage as it prevailed before 1918, with a few trivial and perhaps unimportant exceptions—exceptions which, I think, if the Bill is accepted by the House, might as well go along with the other portions of the Act that are being amended. Therefore I say that this measure should be discussed by the House; that it should not be sent to a committee before the principle involved is adopted by the House, and that the motion setting up this committee should be rescinded if only as a matter of respect to members of the House.

Now, when the Bill was introduced the other day the hon. member for Yarmouth (Mr. Spinney), in presenting it, said:

If the introduction of the present measure, which proposes to amend the Civil Service Act of 1918, leaves the impression on the mind of any hon. member that the Government is receding from the main principles of that statute, namely, the abolition of patronage, he may at once dismiss that thought.

Now, with all due respect to my hon. friend I do say that that was hardly a fair description of the measure, because it is, without a scintilla of a doubt, a reversion to the patronage system as it prevailed prior to 1918. There are some exceptions, I admit, but they are unimportant, and, as I have already said, if we adopt this measure we might as well let these exceptions go with the other provisions of the Civil Service Act of 1918 which are being amended.

The Prime Minister (Mr. Meighen) sought to hasten the transmission of this Bill from the House to the committee upon the ground that the principle of the Bill had already been discussed upon a resolution of the member for Victoria (Sir Sam Hughes). Well, I do submit to my right hon. friend that that was hardly good ground for hastening the measure

## Notes on "Civil Aviation"

from the House to the committee. A discussion upon a resolution asserting abstract principles can hardly be regarded as taking the place of a discussion of the principles involved in definite legislation.

On the resolution of the hon. member for Victoria many matters were discussed. While I was not present on the occasion of the debate upon that resolution, upon reading some few days later the speeches that were delivered, I was gratified to learn that the principle of the Civil Service Act had been supported by practically every hon. gentleman who spoke, no matter on which side of the House he sat. I was very much pleased at that time to read the remarks of the right hon; Minister of Trade and Commerce (Sir George Foster) whom I had always known to be a sincere and zealous supporter of the principles embodied in the Civil Service Act.

He stated, as reported on page 844 of unrevised Hansard of March 11, 1921:

Now, in so far as there may be betterments in administration, I am open to the adoption of those betterments, but I am absolutely against putting patronage back either here or in the Outside Service, except under very exceptional circumstances.

Later on he said: I do not want to go back to the old system of patronage. I felt my heart throb in response to sentiments expressed by the member for Ottawa (Mr. Chabot), when he faintly adumbrated the joy and the pleasure of living in Ottawa as a public man in these days as compared with the times...

John Allister Currie Unionist : What is the system of promotion?

Alexander Kenneth Maclean (Halifax) Unionist: I am coming to that later. It robs the Civil Service Commission of its principal duties;-it is doubtful whether it would be worth while retaining the Commission to carry on the duties left it under the Act if amended as proposed. It would be worth while, I think, for the House to consider briefly the history of the events leading up to this legislation and to study carefully the provisions of the Bill-because, having regard to the remarks made by hon. members of the Government in support of the measure, it is evident that they themselves are not fully conversant with it.

I should like to recall the attention of hon. gentlemen to the fact that in the election of 1917, the then Prime Minister (Sir Robert Borden), in his platform, stated to the public that he proposed the elimination of patronage in appointments to the public service. That pledge was deliberately and fully carried out. I admit that it was a tremendous step to take in legislation of this character, and that we proceeded further than any other country in the world had up to that time. I can quite understand how this might affect political organizations, how it might directly and indirectly affect members of Parliament and prospective candidates to Parliament.

I can understand what confusion it might possibly create, and it created some. But, nevertheless, this Parliament, after due deliberation, with the support of hon. gentlemen on both sides of the House, unanimously accepted the Civil Service Act of 1918 introduced into Parliament in fulfilment of the pledge which the then Prime Minister made to the country in 1917.

I think I may assert without much serious criticism that when a measure is placed on the statute books of this country in such circumstances, no Government should attempt to violate the main provisions or principles of that Bill without at least absolute and due frankness to the House, without affording to the House an opportunity of discussing the Bill, and certainly there should be no evidence of an attempt to send it by a subterranean passage to a committee of this House without the House knowing what the Bill contains.

Further, I think every hon. gentleman opposite, who is now a member of Government, heartily supported the Bill of 1918, and all the amendments that have been made to it since then. I remember reading reports of speeches delivered by the Prime Minister (Mr. Meighen) and his colleague the Minister of Immigration and Colonization (Mr. Calder) on their western tour during the autumn of 1920, and I observed that on frequent occasions they solicited support for the Government upon the fact that the Civil Service Act of 1918 had been introduced and adopted, and evidently they were both seeking support from the western provinces upon this measure. It seems strange that, within a few months after soliciting electoral support upon this measure, they should become responsible for the introduction into this House of an amending measure, which practically destroys the most vital principles of the Civil Service Act. I wish to assert the following proposition as a sound principle, applicable to the question, and to the parliamentary system obtaining in this country. In 1917, an election took place upon several issues, including the Civil Service Act, under circumstances which I detailed a moment ago. That platform or public pledge was converted into definite legislation. There has been no election since that date, and, therefore, no attempt should be made to destroy that measure without an appeal to the

## Notes on "Civil Aviation"

country. Some hon. gentlemen opposite express dissent; but if those gentlemen opposite were elected on that platform and supported and assented to the principle involved in that legislation, by what authority can they openly and brazenly revert to conditions which existed prior to the passage of the Civil Service Act of 1918? I deny that constitutional authority rests with the Government or with Parliament to make such important amendments to the Act prior to a dissolution of Parliament and an appeal to the people. Of course, Parliament is all-powerful; it may amend to-day anything to which it committed itself yesterday. Parliament undoubtedly has the power; but considering all the circumstances in which this legislation was submitted to Parliament and to the country during the election preceding the constitution of this Parliament, I say that this Parliament cannot very well now go back on the principle of that legislation.

This Act has been in force for three years. I concede that it has not been a very popular measure with certain sections of our people. It is not popular, it is quite true, with many members of parliament. I do not question their right to that view or to opposition to the measure. I appreciate fully the basis and reasons for their opposition to the Act and their prejudice against it. The measure was not popular amongst certain civil servants and I think the Act was made unpopular with the public by the unjustifiable attitude of many sections of the Civil Service at one time or another since the introduction of the Act. There has been much confusion, of course, by reason of the enactment of such legislation. That was to be expected; it was unavoidable; you could not cast away the Civil Service Act of 1908 and insert in its place the present Act, with the very important and almost violent changes which it includes, without creating confusion. But the present law has been in force for three years; it is beginning to be understood; it is becoming popular with the masses of the people; it is becoming more acceptable to the Civil Service than ever it was; and as the days go by, it should become more acceptable to members of Parliament and they should be glad to have upon the statute books of this country legislation which would do away with the harassing and disconcerting duties attaching to matters of patronage in connection with appointments to the public service.

If it were not for the Civil Service Act of 1918, there would be thousands more  
[Mr. A. \*K. Maclean.]

people in the public service than there are to-day. It is true there are ten or eleven thousand persons more in the public service than there were in 1914, but it is not difficult to understand the reasons for this increase. The Soldiers' Civil Re-establishment, the Soldiers' Land Settlement, the Income Tax Branch of the Finance Department, the Pensions Board, the Record Office, the Air Board, and sections of the Militia Department, are all practically new departments; they are war departments; they are incidents of the war. Their growth and development and the employment of many persons within those different branches of the public service was not due to the Civil Service Act, but was, as I say, one of the incidents of the war. I fancy that if one were to go through the various departments with a view to ascertaining the number of persons within the service, he would learn that there are no more persons engaged in the public service to-day than there were in 1914, and I say that the tendency in the future will be to reduce the number. Why? Because there is no incentive to-day to create new positions, for the reason that no person seeking appointment and no person seeking the creation of a new position or office, knows who under the competitive system will obtain the appointment. Now if Parliament and the country are serious in wishing a reduction in the Civil Service Staff to proper proportions, they certainly should not desire a reversion to the provisions of the Civil Service Act of 1908 and its amendments. The Civil Service Commission and the Act deserve credit for some of the things that have taken place in connection with certain departments of government. Great improvements are to be made, so far as the number of persons employed is concerned, in the Post Office Department and the Customs Department. I have not personally seen the report of the Commission to the Government, but public rumour would justify me in saying that several hundred persons are to be retired from these two departments, and I believe I am right in saying that this can be done without injustice to the departments and without in any way lessening their efficiency. This means a saving of money, and surely this is a time, with our mounting expenditure, with our taxation now already at the breaking point, when we should restrict public expenditure for all purposes, but particularly should we protest against the creation of unnecessary public offices and the appointment of persons unnecessarily to public offices.

[...] Now, I venture the statement that if the Bill now before the House becomes law, that [...] we shall very quickly revert to the condition of affairs when it will cost anywhere from half a million to a million dollars more to run that department than it does to-day. You cannot reorganize the public service, you cannot reduce the numbers therein, unless the whole force is entirely removed from political influence, and such is the great value of the Civil Service Act, because, the motive for the creation of new positions having been removed, positions will not be unnecessarily created. I want to make this further point: we are embarking to-day upon the experiment of Government control and, practically, Government operation of railways, and when the Grand Trunk has been acquired, our railway system will probably involve a mileage of considerably over 20,000 miles. I think I can safely say to-day, to the credit of the Government and its immediate predecessors, that the railways, in so far as they were subject to the control of the Government, have been remarkably free from political influence. I have heard that statement questioned by some of my friends on this side of the

## Notes on "Civil Aviation"

House, but I do affirm, without any fear of successful contradiction, that the railways of this country have of late been remarkably free from political influence. Why? I say, Mr. Speaker, that this is due merely to the fact that the Civil Service Act of 1918 was passed and has since been in operation. The effect of that Act upon the public mind was such as to make it possible for the Government, or members of the Government, to permit the operation of our railways free from political influence and political patronage such as were known to exist in the years gone by. If that Act is destroyed, and if the Bill now before the House becomes law, then I declare that the railways of this country will become a machine of the political parties, in which case this country might as well get rid of the railway system which we own and control, and endeavour to make some disposition of it that might give it a show for its existence. Some hon. gentlemen may say that there is very little connection between the fact that the Civil Service Act is in force, and that therefore appointments and promotions are free from Government control, and the operations of the railways, which do not come under the Act. But hon. gentlemen know the psychology of the public mind as well as I do, and they will readily perceive how easy it is to secure public approval of the operation of the railways without political influence, when you have the great body of civil servants of the country under the Civil Service Commission and altogether free from any political influence or control. There is another reason, I think, why the Civil Service Act should be allowed to stand as it is, - for the present at least, and why this Bill should not pass. I refer to the matter of preferential treatment given to returned men in appointments to the public service. Hon. gentlemen will remember that back in 1916 an Order in Council was passed making all appointments to the Civil Service, whether in the inside or the outside service, subject to a certain qualification, in regard to returned men. I think I had better read the Order in Council: In making all appointments to the Civil Service, whether in the inside or in the outside service, preference shall be given to those candidates who have served overseas in His Majesty's Forces during the present war, and who have been honourably discharged therefrom, especially to those who, through disability occasioned by active military service, are unable to fulfil their previous occupations. In 1918, a further Order in Council was passed, as follows: In all competitive examinations held under the Civil Service Amendment Act, 1908, persons who have been on active service overseas in the military or naval forces of His Majesty, or of any of the Allies of His Majesty, who have left such service with an honourable record or who have been honourably discharged and who obtain sufficient marks to pass such examinations, shall, irrespective of the marks they have obtained, be placed in the order of merit, on the list of successful candidates, above all other candidates. Such was the position of affairs in relation to preferential treatment of returned men in appointments to the public service in February, 1918. Naturally, these provisions, as contained in the Orders in Council, would be incorporated in the legislation following, namely, the Civil Service Act of 1918, and I shall read section 39 (a) of the Act, which is as follows: Provided, however, that in all examinations for entrance into the Civil Service, persons who have been on active service overseas on the military or naval forces of His Majesty, or of any of the Allies of His Majesty, during the present war; who have left such service with honourable record, or who have been honourably discharged; or, when any persons who have served as aforesaid have died owing to service overseas, the widows of such persons, and who in either case obtain sufficient marks to pass such examinations, shall, irrespective of the marks they have obtained, be placed in the order of merit, on the list of successful candidates, above all other candidates. I submit that this provision of the Civil Service Act in respect of preferential treatment for returned men, can operate only under that Act as it stands to-day.

The Bill before the House repeals it, I would say, as regards fifty or sixty per cent of the total service. It is actually impossible to carry that section into effect if the Bill before the House becomes law. Further, no means are provided in the Bill for giving preference to returned men, and I doubt whether means can be so provided, for the reason that appointment upon competition is very largely done away with by the Bill, as is also promotion upon the competitive basis. I do not see how the Bill could be amended to safeguard that provision as contained in an Order in Council passed in 1916, and further supported by an Order in Council passed in 1918, and later by the legislation-

John Allister Currie : Will the hon. gentleman permit me a question, because he seems to have a brief for the Civil Service Commission and of course he will have all these facts.

Alexander Kenneth Maclean: No, no.

John Allister Currie : would he be kind enough to inform the House "what percentage of the returned soldiers appointed have been appointed as permanent civil servants, as compared with the other appointments that have been made by the Civil Service Commission" ? That is the point at issue.

Alexander Kenneth Maclean: I am sorry but I cannot answer my hon. friend's question. It is altogether too big an order for me to answer offhand and I would need to have access to the records of the Civil Service Commission to inform

## Notes on "Civil Aviation"

myself. But my hon. friend knows, just as well as I do, that thousands of returned men have been appointed to the public service.

John Allister Currie : Nearly every one of them has been fired by the Civil Service Commission.

Alexander Kenneth Maclean: I say this to my hon. friend, and I say it to the Government: If they desire to restrict the operation of that section in relation to the appointment of returned men to the public service, if they wish to withdraw the preference given returned men in whole or in part let it be said so; that may not have been the intention of the framers of the measure, but very largely it is the effect of it. Now, as I say, if it is desired to amend section 39 (a) of the Civil Service Act let the Bill make provision for it

17 9i

clearly so that we can understand the possible effect of the thing if it becomes law. I do not say that this section should always remain in the Civil Service Act. We may be approaching the time when it should be amended somewhat, there probably will come a time when it should be stricken out entirely from the Act; but it has been a provision of the Act highly regarded by the returned men, it has done a great deal towards the rehabilitation of many of them, and it should only be cut out, or amended, or restricted in any way, after due deliberation.

Mr. McGIBBON (Muskoka): Will the hon. member tell us what percentage of the higher appointments, if any, have been given to returned soldiers?

(The term "returned soldier" was defined in the 23 June 1920 Act of Parliament as "any person, male or female, who had served in :

1. the naval,
2. military or
3. air

forces of Canada in the Great War, or, having been domiciled and resident in Canada on August 4, 1914 had served in any of His Majesty's:

1. naval,
2. military,, or
3. air

forces abroad in the said War; or in the

1. naval,
2. military or
3. air

forces of one of His Majesty's Allies or Associated Powers in the Great War; and who had been retired or obtained honourable discharge therefrom".

Alexander Kenneth Maclean: I cannot answer that question either

Mr. McGIBBON : Practically none

Alexander Kenneth Maclean: I should say a great number of men have been appointed to the higher positions but exactly what number, of course, I cannot say.

Now, further, Mr. Speaker, I want the House to understand this point. It may be that the Civil Service Act of 1918 proceeded too far, I can quite understand any hon. gentleman raising that point, but when it is raised I should like the privilege of debating it, I should like to see it come before the House in a clear-cut fashion so that we may be faced with a definite issue. It may be that the rural postmasters should be excluded from the operation of the Act; it may be that manual labour should be excluded from the operation of the Act; but there is no necessity of introducing a Bill for that purpose. If hon. gentlemen will turn to clause 38 (a) they will find a section framed with that express design; I am in a position to speak with some authority upon this point. That section is as follows:

-the provisions of this Act shall not apply to positions in connection with the Government railways or any railway owned or controlled by His Majesty, or to any position on any ship of His Majesty until the Governor in Council otherwise directs in any case where

## Notes on "Civil Aviation"

the Commission decides that it is not practicable to apply this Act to any position or positions, the Commission, with the approval of the Governor in Council, may make such regulations as are deemed advisable- Now, Mr. Speaker, when the Act was drafted it was foreseen that it might be difficult or impracticable to carry out certain of its provisions, and that it might some time in the future be desirable to remove certain classes of public servants from its operation, and, that was the purpose of that section. For some reason or other which I have never been able to understand, the Civil Service Commission undertook to make appointments to His Majesty's Ships-I do not mean the naval ships but the ships controlled by the Marine Department. For a certain time they made appointments to this part of the public service; I do not know why they did, or where they got their authority for it, but at least they did it. Last July they submitted to the Governor in Council a recommendation to withdraw this class from the operations of the Civil Service Act and they were withdrawn. Now I am sure if the Government feel that rural postmasters and manual labourers, for example, should be withdrawn from the operations of the Act, and they ask the Civil Service Commission to meet them face to face to discuss the suitability and practicability of such a suggestion, the commission would meet them in a fair spirit and I have no doubt they would reach a right conclusion upon it. I do not hesitate to say that very many strong reasons could be given for the elimination of these two classes from the operation of the Act, although I do not say that I would so change the law at the present moment. And my reasons for not doing so now would be these. In the first place the Civil Service Commission affords the best safeguard that the returned men will be given the preferential treatment required by the Act and which I think represented the judgment of Parliament and the wishes of the country.

John Allister Currie : Will the hon. member show me where, in any single instance, any body representative of the returned soldiers has passed a resolution endorsing the Civil Service Commission?

Alexander Kenneth Maclean <sup>175</sup>: The returned men will have an opportunity of making their views known to Parliament and the country. I cannot speak for them; but I say I would object to making that change at the moment for two reasons: First, the Civil Service Commission affords a safer assurance for preferential treatment in the appointment of returned men to the public service than would be afforded if the appointments were made by the Governor in Council. For the well-being, comfort and happiness of my 'hon. friends opposite, who are members of the Government I would like to see the Act remain as it is.

In these difficult and trying days when there is so much unemployment, is not the public treasury better safeguarded by the intervention of the Civil Service Commission in the appointment of manual labourers, than if that duty were thrown upon the departments of government who inevitably would be influenced-I know I would be myself and I believe they would be-by demands from constituents for employment of one kind and another?

And, Mr. Speaker, the House knows just as well as I do that the creation of public positions, merely for the purpose of affording employment, will never solve the difficulties which are presenting themselves to us today.

Therefore let me make this suggestion, Mr. Speaker, that if the Government really desire to withdraw certain classes from the operation of the Act, let them invoke section 38 of that Act; let them request a conference with the Civil Service Commission. I am sure they will be met in the proper spirit and that both parties will endeavour to do what is right in the circumstances.

Now, I purpose to briefly go over some of the provisions of the Bill.

It is for me at least a difficult measure to understand, and I am not clear what the draftsman intended when drafting the Bill. I would ask hon. gentlemen to accompany me as I go over the several clauses, which are few in number. Subsection 1 of section 1 states that the Civil Service Act: - in respect to organization and changes in organization, changes in classification, appointment, transfer, promotion, salaries and increases of salaries - **Shall not include:** Manual labourers. . . . post masters. . . . professional, scientific and technical officers.

I desire to add another word to what I have already said in respect to manual labourers, and that is that the lexicographer will have to conjure up a new definition of the term "manual labourer" if they would include all who would be appointed to the public service under subclause (a), if it became law in its present form.

Manual labourers to-day are, after all, controlled by the Government or the departmental heads, and there is really no purpose to be served by the amendment. Casual labourers employed for less than thirty days are selected by the heads of departments without regard to the Civil Service Commission. If employed for more than thirty days those heads of

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<sup>175</sup> <http://www.lipad.ca/full/1921/05/02/6/>

## Notes on "Civil Aviation"

departments must submit a list of the same to the Civil Service Commission, accompanied by a certificate which reads as follows [this is the form used in the Public Works department]:

I certify that the employment of the above person is necessary for the efficient carrying on of the work of the department. The selection has been made without reference to personal or political consideration and strictly on the merit principle, as between persons applying or available for such positions. The appointee has satisfied me as to his qualifications. The appointee is suitable as to age, character and habits. The salary is fair and reasonable and does not exceed the rates approved by the Department or prescribed by the Civil Service Commission. The above-named civilian was employed only after efforts were made to obtain the services of a returned soldier and none were found to be available.

In Ottawa the Civil Service Commission have an employment bureau, and heads of departments requiring any short-time employees or manual labourers go to that bureau, where they are furnished with a list of those available. That list is practically given to the Civil Service Commission by the Great War Veterans' Association. If manual labourers are required outside of Ottawa the practice is to use the employment bureaus established under legislation of 1918 or 1919 and directed by the Minister of Labour. There the Great War Veterans' Association also list those of their men requiring employment. Those bureaus are co-operating with the Civil Service Commission and departmental heads, and so far as manual labourers are concerned the situation is very satisfactory; nobody is complaining, the returned men are protected according to the spirit of the Act, there is no loading of the Civil Service because of the watchfulness of the Civil Service Commission, and the departmental heads do not want to go back to the old conditions.

Subsection 1 also refers to postmasters. I think if ever the time arrives when certain of these positions should be excluded from the operation of the Act, the exclusion should not be so wide as is indicated in this section. I think it would be quite sufficient if it were merely extended to appointments to rural post offices; and, of course, I am not admitting that even that should be done.

Subsection (c), however is the very objectionable portion of the proposed enactment. It covers: Professional, scientific and technical officers employed for the performance of duties as such.

Proceeding with subsection 2 it will be found that it provides that these three classes shall thereafter: - be appointed, promoted, transferred and otherwise regulated- as they were before the passage of the Act in 1918.

Now, just imagine what would come within the classes of "professional, scientific and technical officers."

I fancy it would include one-half of the Civil Service in Ottawa.

All lawyers, doctors, engineers, architects, draughtsmen, actuaries, accountants;  
technical men of the Mining Department would come within its scope;  
also a great portion of the staff of the Department of the Interior-all within the Reclamation Service, the Natural Resources Branch, the Parks Branch, the Water Powers Branch, the Topographical, Geodetic and other branches of that department;  
technical men in the Marine Department;  
technical men in the Naval Department;  
all the Air Service;  
a large proportion of the Militia Department, and a great portion of the Finance Department as constituted at present.

We had experience of the equivalent of this in the Act of 1908, where under section 21 it was provided:  
If the deputy head reports that the knowledge and ability requisite for the position are wholly or in part professional, technical or otherwise peculiar, the Governor in Council, upon the recommendation of the head of the department based on the report in writing of the deputy head, may appoint a person to the position without competitive examination.

Large numbers *improperly got into the service through that clause*, and one can readily see how it could be greatly abused.

That was our experience. But taking this sub.-C section 1 literally, which provides that all professional, scientific and technical officers in the Inside and Outside Services are to be employed by the Governor in Council, nothing would be left but practically the clerical and stenographic services. Now under subsection 2 of section 1 the salaries of these persons are to be fixed by the Governor in Council making the appointment, which doubtless will be out of alignment with the remuneration to that part of the Civil Service which remains under the operation of the Civil Service Act.

## Notes on "Civil Aviation"

The result would be great variations in remuneration and consequent discontent in the Civil Service; there would really be a recurrence of the position which we sought to avoid in the Civil Service Act of 1918, that is, *of paying different salaries to different persons for doing the same class of work.*

[...] Now, I would like to direct the attention of the House to the latter part of subsection 2 of section 1: Provided that, except in the case of manual labourers, and professional, scientific and technical officers as above described, no person appointed shall be retained in employment and then it goes on to provide that a certificate of competency must be obtained from the Civil Service Commission. Now, [Mr. A. K. Maolean] that section really means this: I will read it as it really.

23 May 1921 : Parliament - Ottawa, Ontario : The House on Committee of Supply, Mr. Steele in the Chair re: Air Board, Civil Aviation, Canadian Air Force,

Mr. Hugh Guthrie (Solicitor General of Canada; Minister of Militia and Defence)(unionist) : As the committee is aware, an Air Board was established by legislation in this country in the spring, I think, of 1920. Last year was practically the first year of our operations, and was largely taken up with the work of organization and of getting ready. The amount expended last year was considerably in excess of the amount asked for this year, by something like \$375,000. There are two branches of the Air Service, the Civil Aviation Branch, and the Canadian Air Force, which is an adjunct to the military service of Canada. The four items which appear in this Estimate fairly represent the work of the Board and the expenditure of the money. Our salary list amounts to about \$75,000, and we have 106 employees.

William Daum Euler (Laurier Liberal) : What is meant by "Civil Aviation?"

Mr. Hugh Guthrie : It is work in connection with civil flying, purely and simply. We are attempting to do, in fact last year we accomplished, considerable work in what might be called research or exploration. The board has established provincial boards throughout the Dominion, the presiding officer of these provincial boards being the Lieutenant Governor of the province. The provincial board meets periodically, discusses the situation in regard to its own province, and makes recommendations to the Government. Several of the provinces have agreed with the Air Board to stand half the expense of all flying operations undertaken within their territory. We have such an agreement with the province of British Columbia, with Alberta, and, I think, although I am not sure, I could ascertain the fact readily -with the province of Ontario. The Board did a lot of valuable work last year in the province of Quebec. It surveyed all the northern part of Quebec from Lake St. John for a distance of 250 miles north, and I believe that the results obtained in two weeks, flying operations were far better than the work accomplished during five years of progress on the land. Air photographs have been taken of all that territory, showing the location of the lakes, the rivers, and the timber areas, the photographs being distinct enough to show the burnt timber and to distinguish hard wood from soft wood; in most cases also, it shows whether streams are navigable or not. These photographs were regarded as a great achievement by the Air Force, and were welcomed by the province of Quebec. In British Columbia, we do fire ranging, and some exploration work on the coast, and we are also establishing a station there in connection with timber in the railroad belt.

As the House is aware, the Dominion of Canada owns a very valuable block of timber in the heart of British Columbia. In Alberta, something is being done in the exploration of the northern territory; the work there has not been as far advanced as it has been in the province of Ontario. It is hoped that during the coming season the Air Service will be of the greatest assistance in connection with the surveys of oil lands, etc. They are making preparations now in that respect, although actual work has not yet been begun. Work is also being carried on in connection with fire ranging in the Rocky mountains. This is all a part of the work of the Civil Aviation Branch, in addition, an air line has been mapped out across the continent, and certain landing stations have been erected. But the policy has not been to establish such stations at the expense of the Dominion; the municipalities desiring landing stations must establish them; the Board locates them and leaves it to the municipalities to decide whether they want landing stations established at these places. As the committee is aware, we received a very large number of aircraft from the British Government at the conclusion of the war. We have not been required to purchase much in the line of aircraft equipment, although year after year our equipment will become more and more obsolete. New inventions are taking place almost monthly, and certainly quarterly. Great improvements were made last year over the year before, and I anticipate that as time goes on there will have to be an appropriation for new aircraft. The figures to-day, however, do not contemplate such an appropriation. We are practically operating now with machines given us.

William Daum Euler : How many airships are in commission in the two services, respectively, and how many men are employed?

Mr. Hugh Guthrie : I do not know that I can give the number of machines that we have at present; there are a large number of them not actually in operation, not having yet been fitted up for the purpose. The following machines have been erected and



## Notes on "Civil Aviation"

tested: 12 D.H. 9A's.-These are technical terms-12 S.E. 5 A's; 43 Avlo, 135 h.p.; and 6 D.H. 4. We have 105 civil employees, and we have taken over Camp Borden, which is our military air centre, and fitted it up as an aviation station. We have there an air superintendent, a superintendent of engine repair shops -

Frank S. Cahill (Laurier Liberal) : What are their salaries?

Mr. Hugh Guthrie : The following is a list of these employees:

1. Air Foreman Mechanic 2,040
2. Superintendent of Engine Repair Shops. 2,940
3. Air Pilots 2,460 and
4. Navigators 2,460
5. Air Foreman Mechanic 2,040
6. 3x Air Foreman Mechanics (3) each.. .. 1,800
7. 4x Air Riggers at 1,620
8. 9x Air Riggers at 1,320
9. 5x Engine Fitters at 1,620
10. 10x Air Engine Fitters at 1,320
11. One Air Fabric Worker at 1,080
12. 2x Carpenters at 1,080
13. One Motor Transport Driver at 1,080
14. One Sign Painter at 1,080
15. 2x Clerk-Stenographers at 960

Frank S. Cahill : Is that in the civil force?

Mr. Hugh Guthrie : That is all in the military force.

Frank S. Cahill : Have you the civil force?

Mr. Hugh Guthrie : The civil force totals 105.

1. In the operations branch we have 16;
2. in the certificates branch, 6;
3. headquarters, Canadian Air Service, 7;
4. secretary's office, 2;
5. technical branch, 5;
6. equipment branch, 17;
7. medical branch, 2;
8. accounts branch, 27;
9. intelligence branch, 8;
10. records branch, 15

Frank S. Cahill : What is the reason for the increase of 50 per cent in salaries over last year?

Mr. Hugh Guthrie : The chief increase is due to increase in staff.

These salaries are fixed by the Civil Service Commission, under whom all appointments are made.

In connection with the mechanics, it must be remembered that there are at Camp Borden a large number of expert men.

*In one or two instances we could not get any men in Canada; we had to bring them from Great Britain.*

*These are the highest type of artisans, and as a rule they call for more than the ordinary artisan's salary.*

*They are expert and highly trained men.*

Mr. William Daum EULER [DOT] : Is there any system of allocating the civil aviation force to the various provinces?

Mr. Hugh Guthrie : That is done in accordance with the demands made upon us.

Mr. William Daum EULER : By whom?

## Notes on "Civil Aviation"

Mr. Hugh Guthrie : *By the provincial associations, with the concurrence of the Provincial Governments*, because, unless the Provincial Government is prepared to stand part of the expense, we do not undertake the work.

We have done some work, however, wholly at the expense of the Dominion Government, in Alberta, and, I think, in British Columbia.

The provinces send in their recommendations and we allocate the work according as the staff is available, and as we have the money.

The demands on us for the coming season are perhaps a little more than as represented in this vote.

I have the particulars and the matter may come to the House on another vote; but I cannot speak with certainty in that regard because it is not settled.

Isaac Ellis Pedlow (Laurier Liberal) : Do the Provincial Governments contribute anything to the air force?

Mr. Hugh Guthrie : Yes, for civil aviation in connection with work done for the provinces in the way of exploration, surveys, fire protection, etc. They enter into an agreement on a fifty-fifty basis.

Frank S. Cahill : Is it the intention to continue the civil air force? When did the Government decide to undertake the work of surveying the different provinces? Is not that work that should be done by the provinces themselves, and not by the Dominion?

Mr. Hugh Guthrie : This work is not being done for the provinces alone. There are territories of our own, belonging to Canada and not to any province, away to the North, and also in the Railway Belt, in which we operate. Work has also been performed in connection with our coast service. I suppose as time goes on the usefulness of the airship will be demonstrated. Only a few days ago we were asked to act for the Government of the Dominion in connection with customs examinations at Victoria [DOT] and Vancouver, and if the money is voted by Parliament we will certainly do so. It is charged that there has been a good deal of smuggling of drugs, opium and the like, into Vancouver and Victoria, these drugs being dropped from incoming ships into the ocean and picked up by small vessels; and air craft can be very readily and satisfactorily used not only in the detection of such operations but also in their prevention. We have experimented in that direction and, since our airships have taken part in the work of prevention, that class of smuggling has largely ceased. Then there is work, and a great deal of work, asked of us in regard to Dominion lands by the Department of the Interior. As the House is aware these lands are largely vacant lands and in regard to them a very long programme has been prepared—at least it is now in the shape of requisitions which have not yet been finally passed upon. <sup>176</sup>

Mr. Hugh Guthrie : [...] the Civil Aviation Branch has, of course, charge of the training of all airmen, the granting of certificates, and the prescribing of all flying conditions. That branch is already kept busy with applications of various kinds. Regulations are passed prescribing the law under which all flying is done in Canada. Just at the moment there is an anomaly in the condition between Canada and the United States. Canada, having become a member of the League of Nations, is bound by certain general regulations applicable to all nations which became parties to the covenant. In the meantime we are providing our own regulations' and have notified the United States authorities that their machines flying over Canada must comply with our requirements, notwithstanding the fact that the United States has not become a member of the League of Nations.

Isaac Ellis Pedlow (Laurier Liberal) : To what extent is Canada bound in this matter by her membership in the League, of Nations?

23 May 1921 : Ottawa, Canada - Mr. Hugh Guthrie : Canada has given her assent as a signatory to the covenant of the League of Nations to certain general air rules applicable to all members of the league, and not applicable, of course, to the United States, which has not become a member.

William Duff (Laurier Liberal) : The minister has told us that he is maintaining an air station at or near the city of Halifax. So far as I can learn, that station is absolutely useless, either for commercial or for military purposes. There may be four or five aeroplanes or seaplanes situated there, but they are of no use to the people of Canada. I am sure that the people of Nova Scotia have no desire for an air force or for aeroplanes either in Halifax or anywhere else on the coast of that province. I would like to ask the minister how many accidents occurred during the year 1920, fatal or otherwise?

Mr. Hugh Guthrie : I could not say with any exactitude. I think there were about eight or nine accidents, three of them fatal, if I remember rightly. Later in the evening I can get the exact number for my hon. friend. The secretary of the Air Board is not in the city this afternoon, but he will be here to-night.

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<sup>176</sup> <http://www.lipad.ca/full/1921/05/23/8/>

## Notes on "Civil Aviation"

William Duff : It seems to me that this is a pretty high price to pay for an air service in peace time. If we had war, of course it would be necessary to keep our air service and we would expect to have accidents. But it is a crime to render our very best young men, those from 21 to 25 years of age, liable to be killed or dangerously injured, just for the sake of having in Canada a service which is absolutely unnecessary. I protest against it.

Mr. Hugh Guthrie : I do not believe they could, because these appropriations are pared down even to a dollar. These are the details of the \$825,000 item:

28-day refresher course for 190 flying officers \$380,000

28-day refresher course for 50 *ground officers* 22,000

Three months course for 400 mechanics 240,000

Spares 100,000

Seaplane training 60,000

*Provincial executives, C.A.F. Associations* 23,000

Total \$825,000

Those are right to a dollar without any room for contingencies. I have not the items for civil aviation, but I know the basis on which the appropriations were made up, and I know there is not a dollar left over unless there was a special item for contingencies, so closely was the expenditure pared down.

William Daum Euler : By whom are the items made up?

Mr. Hugh Guthrie : By the vice-chairman [Col. O. M. Biggar, K.C.] and the secretary.

William Daum Euler : Who are the members of the Air Board? What salaries are they paid? What are the expenses?

Mr. Hugh Guthrie : I am the chairman of the board. Col. O. M. Biggar, K.C., is vice-chairman. [...] Col. Biggar gets no salary. Sir Willoughby Gwatkin is inspector general of the force. Lt.-Col. Leckie is director of flying operations. Lt.-Col. Scott is controller of civil aviation, Captain Hose is director of the Naval Service. Dr. Deville is surveyor general. Captain Hose and Dr. Deville receive nothing for their services. I think the salaries are \$5,000 each for the three other officers whom I named. It may be that General Gwatkin receives more than that. I can verify that in a minute or two. <sup>177</sup>

Samuel William Jacobs (Laurier Liberal) : How is the distinction made between those who receive a salary and those who receive nothing?

Mr. Hugh Guthrie : The other members of the board like myself and Col. O. M. Biggar, Capt. Hose and Dr. Deville *are in other offices of the Government* and receive other compensation.

Frank S. Cahill (Laurier Liberal) : Are the members of the board all Canadians?

Mr. Hugh Guthrie : That depends upon what you call a Canadian. General Gwatkin is an Englishman, long resident in Canada. Captain Hose is an Englishman, resident in Canada. The others are Canadians.

Mr. Arthur Bliss Copp (Laurier Liberal) : My hon. friend said that there was an appropriation of some \$23,000 for provincial organizations. How is that distributed? Are there boards in the different provinces?

Mr. Hugh Guthrie : There are nine provincial boards, one for each province, and there is a certain amount of expense in connection with each board. This appropriation of \$23,000 covers the expense of the nine boards.

Mr. Arthur Bliss Copp (Laurier Liberal) : Are there any salaries in connection with these boards?

Mr. Hugh Guthrie : There are no salaries paid *for the boards*. They *hold periodical meetings*, and they have examinations of their men and things of that kind. *Our officers attend the meetings from time to time for the purpose of conference and discussion.*

William Daum Euler : Is there any co-operation between the two branches of the service?

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<sup>177</sup> <http://www.lipad.ca/full/1921/05/23/11/>

## Notes on "Civil Aviation"

Mr. Hugh Guthrie : They are kept separate, but one board presides over them both. Their duties are, of course, separate. One is purely military and naval.

William Daum Euler : Is a man ever transferred from one branch to another?

Mr. Hugh Guthrie : A man may be transferred, but none of the officers.

William Daum Euler : What about equipment?

Mr. Hugh Guthrie : Certain equipment is suitable for military and naval purposes and certain is not suitable for that. *In matters of repairs, civil aviation machines are repaired by the military repair shops.*

William Duff : Who comprise *the Nova Scotia Aviation Board*?

Mr. Hugh Guthrie : I do not believe I could give the names. *The Lieutenant Governor is president of it.*

William Duff : He is a flier all right.

Mr. Hugh Guthrie : He is chairman of the board, *reputable citizens named by the provinces themselves comprise the boards. We have nothing to do with the selection of them.*

William Duff : Are they gentlemen who have any knowledge of aviation, or are they appointed on account of some other qualifications? I am speaking only for my own province, because I have some knowledge of the work that has not been done in regard to aviation in my province. It is not necessary to have this aviation board or any aviation in Nova Scotia. I should like the minister to tell the committee what work was done in Halifax last year before we are asked to pass an appropriation, a portion of which is to be spent- in Nova Scotia. As far as my knowledge goes, not one dollar of benefit resulted in 1920 from either a war or a civil standpoint. I doubt if five people in Nova Scotia can say that they ever saw an aeroplane or a hydroplane during 1920, and before we are called upon to vote a large amount of money to maintain a station in Nova Scotia, we should be satisfied that some beneficial result has been obtained. As far as my knowledge goes, it is an absolute waste of money to have this station in Halifax.

Mr. Hugh Guthrie : The board is for the Maritime Provinces, not for Nova Scotia. These are the members of the board:

His Honour the hon. Wm. Pugsley, Lieutenant Governor of New Brunswick;

His Honour McCallum Grant, Lieutenant Governor of Nova Scotia;

His Honour M. McKinnon, Lieutenant Governor of Prince Edward Island;

J. O. Hyndman;

W. H. Dennis;

Pilot Officer A. E. Stephenson;

Flight Lieutenant R. A. Logan, C.A.F.;

Flight Lieutenant J. L. M. White, D.F.C.;

Flying Officer A. McGregor, D.F.C., C.A.F.;

Pilot Officer H. H. Whitlock, C.A.F.;

Secretary, Flying Officer H. R. Stewart, 57 Grafton Street, Charlottetown, P.E.I.

The station in Nova Scotia is considered as absolutely essential for the purpose of a seaplane service.

The naval service nowadays must have as an adjunct a seaplane service, and the best base for that on the eastern coast was considered to be at Halifax in Nova Scotia, and on the west in British Columbia. These are our two seaplane stations. They are kept up very inexpensively at the present time, and our hope is that they will justify the money we are spending on them.

William Duff : The minister has given us the names of the members of the Air Board for the Maritime Provinces, and I notice that some very estimable gentlemen are members of that board. The Lieutenant Governors of Nova Scotia, New Brunswick and Prince Edward Island are members of the board, and I think perhaps no gentlemen are held in higher esteem in the Maritime Provinces than the gentlemen who occupy these positions at the present time, but I think everybody will agree with me that these gentlemen know nothing about aviation. They are on the board, I presume, simply on account of their high official position. I presume that the other members of the board are members of the aviation corps. So far the minister has not given us any reason why this station should be continued. It no doubt is quite proper to have such a station in time of war, and, of course, if a station has to be established, Halifax is the logical place on the eastern seaboard, and the station in the West must be in British Columbia, but at the present time I think there is absolutely no necessity to have any air board or any expenditure on either of these stations. I think that no benefit has been derived by the people of Nova Scotia from having this station at Halifax during the past year or since the war. It is quite true that during the war we had seaplanes in the province of Nova Scotia, but they were supplied to us by the

## Notes on "Civil Aviation"

American Government and were officered by American officers. They did good work. We had absolutely to depend on American officers to guard the coast of Nova Scotia during the war. I doubt whether you could find five men in Nova Scotia who knew that there was a seaplane in or near the city of Halifax in the last year or so, and I say there is absolutely no necessity for maintaining this station at the present time.

John Howard Sinclair (Laurier Liberal) : How many men were trained at Halifax station last year, and to what use is the station being put? I can well understand that Halifax would be an excellent base for such a station, but we would like to know what this station is useful for. Is it training men, or doing something that contributes to the defence of the country?

Mr. Hugh Guthrie : It is not a training station at the present time. All the work that is done up as far as Lake St. John, and, in fact, further west than that, is done by seaplane. All these seaplanes are assembled at Halifax and distributed from there. For instance, the ones that went to lake ' St. John came up the St. Lawrence to that place opposite Riviere du Loup. They made a landing there, and from there went on up the river a considerable distance, and then northward They have to depend upon lake and river landings. You cannot make a landing in the rough forest country at all. It is therefore absolutely necessary to utilize seaplanes. They are assembled at Halifax, and go back to Halifax at the end of the year. *We have a staff of repair men there, but no training takes place at the station. The training, which is largely military training, takes place at Borden in the province of Ontario.*

William Daum Euler : How many bases are there throughout the country, and what is the equipment of each?

Mr. Hugh Guthrie : I do not think I can give the exact equipment. We have a seaplane station at Vancouver in British Columbia, one at Morley in Alberta, one at High River, in Alberta, and we are equipping one for both airships and seaplanes near Winnipeg, Lake Winnipeg being the landing stage for the seaplanes.

Coming easterly, we have a military base at Camp Borden, and a small establishment in Ottawa at Rockcliffe.

We have one in northern Quebec, but from there east we have none until we get to Nova Scotia, where we have a seaplane station.

13 June 1921 - Canadian terms for the AME of the day differ from the United States and Great Britain. The Canadian Air Board refers to the Aeronautical Ground Engineers as "air engineers". It is pointed out that this might lead to some confusion in the future and that "an agreement on such and similar terms as far as they affect English speaking peoples would therefore appear highly desirable".<sup>178</sup>

June 1921 : The Shorts Sliver Streak is relegated to static testing, Royal Aircraft Establishment, Farnborough. ("The Olympia 1920 Aero Show" Flight (22 July 1920) "Air Ministry Acquire Short 'Silver Streak'" Flight (24 February 1921) "Short Bros. and Metal Construction" Flight (11 December 1924)

26 June 1921 : Air Accident : Type : Curtiss JN-4, registration : Canada C-GAAM, Fatalities : None, Injuries : Minor. Pilot : R. Flemming. Aircraft owner : McCall Aero Corp. Calgary, Alberta. BOI convened : Capt. W. May, Finding : post the 1919 daily stunt show over Calgary (flown by May until August 30, and Freddie McCall - until the fall of 1920 for stunts and wing-walking by a Mr. Maybee), the aircraft had been in tension all winter. Pilot Flemming - admitted the rigging may be poor. A confirmation of the rigging was not undertaken - the aircraft had been "re-checked" just before the flight. William Pearce -only eye witness and former RAF mechanic gave evidence the pilot did not stall, but appeared to get into an air-pocket. investigation of the wreckage led to conclusion the machine was faultily rigged. Unable to attach blame to any one individual, closer inspection of aircraft of this age and more Air Engineer courses recommended".

The Dir of Air Operations later commented 13 Feb 1923 "it would appear the Air Regulations were not complied with"

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<sup>178</sup> With reference to Air Engineer notices by the Editor. Aviation Weekly - 13 June 1921

## Notes on "Civil Aviation"

1921 : Regina, Saskatchewan, Mr. Lloyd Rees attempts to climb down a ladder from Curtiss JN-4 G-CAAM to Curtis JN-4 G-AABZ in mid-air. Mr. Rees loses his grip and falls to his death. The Air Board Official report is laconical, however Rees's death prompted the formation of regulations prohibiting performances by aerial stunt-men.

1921 : "May-Gorman Airplanes Ltd" ceases operation.

1921 : Imperial Oil Air exploration using G-CADP - Employs Air Engineers Pete Derbyshire and William Hill

01 April 1921: Pilot Keith Tailor killed in "Category A" accident of Avro 504K G-CYBD (built by Grahame-White Aviation Co. Ltd, UK. ex RAF H9755 - Imperial gift) while instructing at Camp Borden. First Canadian Air Force officer lost in an accident.

20 August 1921 : UK : DH.18 "G-EARI" operated by Aircraft Transport and Travel force-lands at Wallington, Surrey due to engine failure and is wrecked.

August 31 - Sept 02 1921 : Cincinnati Ohio USA - 44th meeting of the American Bar Association : National Conference of Commissioners on Uniform State Laws <sup>179</sup> : We now have under consideration "an act to regulate the subject of the operation of aeroplanes in the science known as aviation." Delegates were present from 43 state associations ^ and there were delegates present representing 87 local bar associations ^ and, in addition, some 20 odd delegates who were not classified at the time these figures were compiled. I think there must have been fully 500 in attendance at the meeting during the day. The man in this Association who was first alert to the situation was Simeon E. Baldwin, formerly Chief Justice, and afterwards Governor, of the State of Connecticut. In 1911, seeing what was coining and having a prophetic instinct and an appreciation of conditions, even as they then were, he asked this Association to take action in respect to the law of what has been styled in the name of this committee, "Aviation, ^ ^ but what is now technically, in the proper terminology called \*\* Aeronautics."

The matter was referred to the Committee on Jurisprudence and Law Reform, and that committee reported that it was not then a matter of such general interest, or of such urgent importance, that any action needed to be taken on the subject by the American Bar Association.

There, until this day, except for the appointment of this committee, the matter has rested. In the meantime there has been the great World War, and the covenant of the League of Nations with respect to Aviation, and the consequent Air Convention, which has been formulated by those participating in the League of Nations, and which has been made applicable in many, if not all, of its members. Though that convention was signed by a representative of the United States, it contains regulations which have never received the approval of the United States Senate, and which are not the law in this country.

The United States is pitifully behind some of the smaller nations of the world in its law of aeronautics ^ substantially speaking, there is no law on aeronautics in the United States. There are certain state laws, there are certain federal laws, in relation to operation ; there are certain local ordinances ; but we are in the humiliating position now that under the Air Convention that has been signed by many of the nations, we are technically under boycott, although it has not been put into operation.

The Air Convention, among other things, provides that the

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<sup>179</sup> 44th meeting of the American Bar Association : National Conference of Commissioners on Uniform State Laws : Officially reported by Charles A Morrison, New York, NY : The Lord Baltimore Press - 1921

craft of non-signatory nations shall not be permitted to fly across the borders of the signatory nations, except under temporary and peculiar conditions. England has had air navigation laws for several years and now has a complete set of those laws regulating flight in that kingdom. Canada has an air navigation law, and has an air board and an air force, and it is only by sufferance that any flyer from this country can cross the Canadian borders today, because there is no power in the United States which is legally qualified to comply with simple regulations for aerial navigation across the Canadian border.

I am advised that as an act of courtesy the Air Board of Canada has given special permission to fly from the United States ^ but that this permission will expire on November 1 of the current year. And when it was contemplated that there should be a balloon race in this country last April, both because of scientific interest and because of sport, the balloons not being dirigible, and being liable to drift across the International Boundary, they had to get special permission from the Air Board of Canada, that if any particular balloon should cross the border it would be hospitably received, on certain conditions, which were prescribed by that Air Board. In Ottawa there is an Air Board, and I have been in correspondence with it.

The report contains a condensed story of the present situation of the law of aeronautics in this country. There are two or three things that I want to call your attention to in the most hasty way. There are several factors which have stood in the way of the proper commercial development in this country of the law of aeronautics and of civil flight. I do not need to say anything about the flight of government air craft. The government has already prescribed numerous statutory and other regulations with respect to government air craft. But so far as civil aircraft is concerned, and so far as a commercial flight is concerned, there never was a greater need for adequate laws than there is today, and there is practically no law whatever on the subject.

All the investigation which this committee has made has shown that those who are interested in commercial development find that it is the law that is defective and not the progress of the art that is at fault, and that if there was adequate law on the subject, we would have commercial aircraft developed rapidly in this country as a means of transportation both local and interstate and international. But capital will not invest in the purchase and operation of aircraft under present conditions. The insurance companies will not insure, because they do not know the extent of the risk.

The fundamental factor is not the mechanical factor, but the legal factor, and the sooner we appreciate that the better.

Now, there are two embarrassments in the proper development of the legal factor. The first is the theory, which our committee suggests ought not to be readily conceded, which is found in the very apt expression of Major Johnson, the legal adviser of the United States Army, on the subject, that the owner of land has no ceiling to his dome. . Major Johnson, in the Air Service Information Circular, concedes that fact ^ and says that it calls for the exercise of the power of eminent domain in order to establish air

routes in the air over the territory of the United States.

The first thing, then, to get through our heads, as I conceive it (and the committee's suggestions are all tentative) is that the burden is on the property owner to demonstrate that he has such a private property in the air though there is no possibility of jeopardizing his possession of the surface. That is, that he has such an interest in the air at a considerable distance above the surface that the power of eminent domain is necessary to acquire that right, and this proposition has not yet been established.

The other embarrassment in the proper development of this law is the dual nature of our government and the undoubted fact that there are constitutional limitations. Gentlemen who are very much interested in the subject matter may say that the United States Government has the unlimited power and the exclusive power to legislate with respect to flight through the air. But they will, in my judgment, be in the same category as those enthusiasts who championed the law that was passed in New York at a recent election to provide \$45,000,000 for the payment of a bonus for returned soldiers. That was passed by an overwhelming majority of the voters. Yet day before yesterday it was declared by the Court of Appeals of New York State to be unconstitutional. You cannot get past the Constitution and you cannot enact any law that you wish by merely shutting your eyes and denying its existence.

The committee calls attention to the fact that although there are undoubtedly powers that may be exercised by the Congress of the United States, those powers have their limitations, and that there are certain powers still reserved by the Constitution to the people of the states. Our judgment and it is a tentative judgment, is that the best ultimate solution of this question is one that will put the United States on a par with other nations and that is a constitutional amendment, which will extend the power of Congress to legislate on flight through the air.

Major Johnson, representing the legal service of the United States Army, reaches exactly the same conclusion. With this conclusion the majority of the committee is in accord. He proposes a tentative amendment to the Constitution of the United States. Our observation with respect to that is this: That a reading of the amendment which he proposes leads to the obvious conclusion that it is framed upon present concepts of flight and its possibilities, and that it is so limited that it has no broad vision for the future, and that if any such power is granted to Congress by a constitutional amendment, it should be by an amendment of the broadest possible vision, and of the utmost possible scope. The committee has no recommendation to make with respect to the form of the law or the form of constitutional amendment. We think that the present, however, is an excellent time to call to the attention of the Bar for their careful consideration and for their best professional thought the fundamental principles by which we should be guided in attempting a proper solution of the question.

I will now read the recommendations which the committee reports and asks you to concur in. For Recommendations, see Report of Committee in Appendix, page 498.)



## Notes on "Civil Aviation"

I must not neglect this opportunity to speak with praise of the fact that Mr. William V. Eooker of Indiana, has had much to do with the recent activity that has induced the American Bar Association to enter upon this inquiry. When Governor Baldwin, in 1911, attempted to do so, it was not deemed the proper time. It is true that Mr. Booker entertains the opinion that the Admiralty and Marine jurisdiction of the United States is sufficient to cover the entire field of this subject and that it needs no constitutional amendment, a view which the committee does not accept.

I submit the report and ask that the committee be continued as a special committee, by the Association. I would suggest in that connection that we have been snfficieBtly educated in the terminology of the art now, so that hereafter the committee shall be known as the Committee on Aeronautics.

I submit these recommendations and move their adoption.

The motion was seconded.

The Chairman :

The matter is now open for discussion. The proposition comes before the Association on the four recommendations stated by Mr. Boston.

R. Wayne Parker, of New Jersey :

I have to compliment the committee on the exceeding good judgment with which their report and recommendations have been drawn. One provision, the most important of all, in my opinion, is that no national legislation shall infringe upon the general powers of the states. Aviation is a matter of great importance, but it is not the only subject that involves these considerations: the whole subject of navigable waters inside the three-mile limit, involves the states and the federal government, the ownership of the land being in the state, while the navigation of the waters for interstate commerce is in the federal government. The question of the improvement of navigable rivers is in the same category. There is much doubt as to whether a dam constructed for the purpose of confining the waters of a stream is under the control of the state or of the TTnited States. A more modem question is the control of hydroelectric power generated by a dam. Then there is wireless telegraphy, which is almost similar, going sometimes within states and sometimes across into other states and into other countries. The same question arises as to whether the United States has jurisdiction over the wireless. There are also the old questions of quarantine and the protection of agriculture from pests, and the regulation of migratory birds.

Aviation is not a single problem all by itself. It is one of a host of questions that has come up before this generation because of the wondrous progress in communication not only by wire, or by land and by sea, but through the aii, electricity, and through the ether\*

I only mention these matters now in order to impress upon this Association the importance of the single subject that

## Notes on "Civil Aviation"

has been raised. I think the recommendations are in excellent form and ought to be supported, but at the same time the consideration of the subject must go very much farther than the one question whether a man may fly from one state into another state or from this country into another country.

George C. Bogert, of Ithaca, N. Y. :

I rise to second the motion of Mr. Boston, that the committee recommendations be accepted. I do this as a member of the Bar Association Committee and also as Chairman of the Committee on Aviation of the Conference of Commissioners on Uniform State Laws. The Conference feels that there is a legitimate place for state legislation, as well as for federal laws. This attitude is entirely in harmony with that taken in Mr. Boston's report

It would be futile to attempt to argue here whether the federal government has power under the admiralty clause of the Constitution to take exclusive control of aviation. This body cannot, in the limited time at its disposal, enter into an extended discussion such as would be necessary to form any opinion on the constitutionality of exclusive federal legislation. The most that we can do is to call to the attention of Congress the important constitutional questions involved, and leave to that body the determination of the constitutionality of various measures proposed to it.

William V. Booker, of Indianapolis, Ind. :

Mr. Boston very graciously mentioned my name in connection with this work. At the Conference of Bar Association Delegates, held in Boston, 1919, I suggested that the jurisdiction over aerial communication would properly lie in admiralty. The matter was discussed then, and a resolution to that effect was adopted. I was made Chairman of a committee on that subject to pursue further investigation. My committee made its report to the conference of delegates at St. Louis, and we made that report . pursuant to the original resolution, passed at Boston, that this matter should ultimately come before the American Bar Association.

Now, I am opposed to these recommendations because they are wrong. This report is not constructive. It says that we need a constitutional amendment. In saying that, it says that we need from 10 to 20 years' delay on one of the most momentous questions engaging the attention of the American people. They say there is no authority for admiralty jurisdiction. I challenge that statement. I say that the right of the admiralty jurisdiction can be proven; it can be proven with biology; it can be proven with the philosophy of language.

There are bills pending in Congress to confer the admiralty jurisdiction. Those bills were written by men whose fidelity to the Constitution is as fixed as that of the men who wrote this report.

They tell you a great deal about that old maxim of the common law to the effect that the man who owns the surface has an ownership which extends from the middle of the earth way up to

## Notes on "Civil Aviation"

heaven. I want to tell you something about that. It is humiliating that the thing should be presented to an intelligent audience "the old doctrine of ownership in the air above us" as one of the old cardinal principals of the geocentric system of the universe.

This old doctrine of the geocentric theory of the universe was an invention of Ptolemy, an ancient Greek astronomer and geographer. It was first challenged by Copernicus, who said that it was not tenable because the earth was round. Yet, today, gentlemen come before this great American Bar Association, this body of intelligent men and ask that we adopt a resolution based on the proposition that the earth is flat!

So I say to you gentlemen, when you approach this question that you approach a domain that leads the sublime thought of the world. Neither the ocean nor the atmosphere is exposed to geometrical measurement. You cannot fix a cornerstone or a boundary line in the ocean or in the air. Neither the ocean nor the air is exposed to allocation. Hence, you cannot set off to any individual his part or portion of either the ocean or the air. Therefore you cannot establish a state in either the ocean or the atmosphere. It follows that both the ocean and the atmosphere are common funds for the use and benefit of all forms of life. Both the ocean and the atmosphere are exposed to astronomical measurements and both are controlled by astronomical influences; both are in motion while the soil of the earth is static.

I offer the following amendment of the motion which has been made, namely:

Resolved, That it is the sense of the American Bar Association that the jurisdiction of aerial communication would lie properly in admiralty, with such reservations in favor of the common law as the common law is competent to give.

Resolved further, that aerial communication, as contemplated herein, is defined to include transmission upon the atmosphere of all mechanical devices and of all forms of written and spoken words. It includes not only aerography but aerophony.

Resolved further, That a copy of this resolution be transmitted to the Congress of the United States, together with the tender of the services of this Association to the Congress in the preparation of suitable bills for the enactment of the sense of this resolution into law, and that a committee of fifteen be appointed by the President of the Association to give such assistance to the Congress as may be required in the premises.

There have been five bills introduced in Congress lodging the jurisdiction of cases arising under the law of the air in the admiralty courts of the United States. Those bills are going to pass. I say that advisedly. Why should we humiliate ourselves by telling Congress that they are going to do that which is constitutionally impossible? They are going to solve this problem, and if there is any error in their judgment, they are going to leave it to the Supreme Court of the United States.

I ask that we declare it to be our sense that this jurisdiction would properly lie in admiralty.

## Notes on "Civil Aviation"

At this point, George T. Page retired from the Chair and Frederick A. Brown, of Illinois, was requested to preside for the remainder of the session. Lee Combs, of North Dakota :

It seems to me that we are laboring under a misapprehension here. I think we will do a great injustice to this committee if we adopt this substitute and fail to adopt the resolution presented by the committee. I cannot agree with the distinguished gentleman from Indiana.

This report does not ask us to recommend that Congress enact any law either for or against the theory advanced by Mr. Booker. It simply asks us as a body of lawyers to request that when Congress does act upon the subject, it first inquire into the intricately involved matters clearly and shall specifically determine what kind of legislation is best to cover the situation.

Jefferson Davis, of San Diego, California :

The members of this Association, I am sure, are grateful to Mr. Boston and his associates on the Aviation Committee for the exhaustive collation of authorities on aviation law, and the air service of this country should be particularly indebted to this committee for its research in what is comparatively an uncharted field.

The achievements of American Aces in command of battle planes on the front have been followed, and are to be followed, by the achievements of the pen of those who under the guidance of men of vision, such as Mr. Boston, Mr. Booker, of Indianapolis, and other distinguished members of the Bar, are to write the charter for civil aviation, and are to guide and direct our federal government and the individual states on the question of sovereignty which they should and will exert over the air.

It is a matter of particular regret to me that I cannot agree with Mr. Boston's recommendation as to the form which legislation on this subject should take. The necessity of a constitutional amendment is opposed to the recommendation of the Committee of the Conference of Delegates from the state and local bar associations. It is opposed also to the report of the National Advisory Committee on Aeronautics, which has endorsed two bills, now pending in Congress, bringing federal legislation on this vital subject under the maritime clause of the Constitution.

I have the same affectionate regard for the Constitution which undoubtedly actuates the members of this committee, but on the other hand, I have at heart the interests of the air service, with which I have been connected as legal adviser, and I think I can foresee the disastrous consequences which will flow from ill-advised action on this subject. An extremely pessimistic view is taken by those who advocate the passage of a constitutional amendment. The theory of the necessity of such an amendment is founded solely upon the premise that the air is owned absolutely by the surface owner, and that all flight over such air space constitutes trespass. They go even further, and say that there can be no development of aerial transportation without a constitutional amendment under which the people of the states would give up their property rights

in space to some extent, and allow an easement of passage. This view of space ownership comes from too literal and narrow interpretation of the common law maxim, "cujus est solum ejus est usque ad coelum."

A careful examination of the authorities will show, however, that this is not law, but is merely a theory which has come down to us from mediaeval days. It is a maxim relating to tenancy, and not to sovereign rights. It is also a maxim relating to rules of conveyance and not to sovereignty.

Aviation is concerned only with the use of the atmosphere for navigation purposes, the right of navigation being only a right to use and not constituting a title in fee to the area affected. It is not a constitutional objection to the exercise by Congress of the right to regulate air navigation that the property or rights of individuals may be incidentally affected thereby.

The German Civil Code qualifies the common law by adding that the owner cannot prohibit interferences which take place at such height or depth that he has no interest in their exclusion.

What possible interest has the owner of land in the passage through the air space above his property of an airplane at an elevation of from say eight to ten thousand feet? In what way can he say that he is damaged by such passage?

I think it can be said that the only rights in space which the courts have seen fit to protect have been rights in space immediately adjacent to and connected with the surface. There are no authorities to the effect that it is a wrong against a landowner to interfere with the space over his land, when the passage is at such a height that the use of the surface is not affected in the slightest degree. The codes of all countries treat the landowner's property in the space above his land as subject to a right of passage by aircraft.

None of these codes require condemnation of an aerial right of way, and none provide that the mere flight through the space above shall constitute a trespass. To retain such a doctrine (usque ad coelum), in the opinion of the British Aerial Transport Committee (report of 1918) would be fatal to civil aeronautics.

In a report on the French Government Air Bill of 1913, M. Thierry, who presented the bill to the French Legislature, said that the commission which framed it, advised that the French law did not give the owner of the soil property in the space above not susceptible of private appropriation. Statutes similar to those enacted by Great Britain, France and Germany, also exist in the other countries commonly classed as the great powers.

America, from whose creative genius the airplane sprang, is asked to ignore the natural evolution of the law of the airplane, as developed by all other countries, and to turn its attention to retrogressive legislation, as a result of which the future of civil aviation would be hopelessly handicapped and retarded for years to come.

## Notes on "Civil Aviation"

In September, 1919, at Boston, the Conference of Bar Association Delegates, an organization affiliated with this Association, adopted a resolution to the effect, that it was the sense of the Conference that Aeronautics should properly lie within the admiralty jurisdiction of the United States. A committee, of which Mr. Hooker, of Indianapolis, was Chairman, was appointed, and two reports were submitted, in both of which federal aviation legislation under the admiralty power was strongly urged.

The National Advisory Committee on Aeronautics recommends that federal legislature should precede any action by the states, and in its last report recommends such federal legislation. Various bills are now pending in Congress, in which such portions of the air as are navigable by aircraft are declared to be within the admiralty jurisdiction of the federal courts. Two of these bills, the Hicks Bill and the Kahn Bill, have been approved by the National Advisory Committee on Aeronautics. To keep pace with what other nations have already done in a field where the first trails were blazed by American genius, we must not lag behind when laws are necessary for the development of a new industry, a new avenue of transportation ; we must not put obstacles in the way, but we must trust to American minds to find a practical solution of present needs, and not let mere theories defeat our progress.

There is a feeling in the minds of all thinking people at this time that the airplane and submarine have brought the doom of the capital ship. We are not concerned so much with legislation over the air during time of war, but the best preparation for the use of the airplane as a medium of defense in the event of war is the development of civil aviation at this time, as a preliminary to the use of the airplane as a medium of defense.

The airplane as a medium of inter-communication and transportation, however, cannot be used successfully at this time unless there is immediate uniform legislation on the subject, and civil aviation is freed immediately from the encroachments of states and municipalities in a field which is\* essentially one for federal control.

The subject of air navigation is national in its character to such an extent as to require uniformity of regulation affecting all states alike, and in such a case the power of Congress has been held by our Supreme Court to be exclusive when state enactments would clearly be repugnant to the exercise of authority by the United States Government.

And now ^ gentlemen ^ having to this extent criticized the report of our distinguished friend from New York, may I not offer as a constructive suggestion that the recommendation of Professor Bogert, an associate member of this committee, be followed by this Association. Professor Bogert, in a very excellent brief, on " Problems in Aviation Law," says :

The best step for the American Bar Association is to recommend to the Senate the ratification of the International Air Convention.

I heartily concur in that recommendation, and might also say that it is in line with an opinion on this subject which I have had

## Notes on "Civil Aviation"

the honor to render the air service. Primarily, of course, we should become signatory to the International Air Convention, and that will be the basis of laws on the subject of aviation. The convention should be ratified immediately, and that, in my judgment, should be our recommendation to Congress.

Illustrating the use of the air for navigation are those cases pertaining to the use of the air by migratory birds. Regulations concerning migratory birds do not fall within the power to regulate commerce, nor within any of the other powers of Congress. The first Migratory Bird Act was held unconstitutional (TJ, S. V8. Chauver, 221 Fed. 228.) Subsequently thereto a Migratory Bird Treaty was entered into with Great Britain, and a second act passed in conformity thereto. The legislation has since been upheld upon the ground that it is within the power of Congress to carry into effect the moral obligation assumed by the nation in the treaty by appropriate legislation. (U. S. vs. Selkirk, 268 Fed. 775.)

The federal government has exclusive power to make treaties with foreign governments, and the case of State vs. Holland, 40 Sup. Ct. B. 382 (1920) decided that where the execution of such a treaty requires federal legislation, such legislation will be upheld, even though it interferes with the internal affairs of a state, but not otherwise subject to national control.

In this case a federal law for the protection of migratory birds, enacted in fulfillment of a treaty with Great Britain, was sustained, though it interfered with state control of birds, and although a previous act of the same purport, but not enacted under a treaty, had been held unconstitutional on the ground that it interfered with the state's reserved rights. (Bogert, Problems in Aviation Law.)

If there be any doubt therefore as to whether the federal government has jurisdiction over the airspace, any doubt would be instantly dissipated by the ratification of the International Air Navigation Convention, and the passage of legislation pursuant to the terms of the treaty.

Harry S. McCartney, of Illinois :

The report is a very valuable contribution to the aviation literature of the day, and particularly towards showing the absolute necessity of uniform regulation of aviation, that is, of national legislation on the subject. It also outlines, perhaps fully, all features of the law that should be covered by such national legislation.

A minor criticism is the space the report devotes, to combating the so-called 'common law rule' that the owner of a lot or tract owns from the center of the earth to the heavens. That rule has been so long exploded that it is not worth serious attack.

I do not interpret the report as some of the gentlemen here

## Notes on "Civil Aviation"

have done. I do not think it advises the constitutional amendment that Major Johnson recommended.

The chief fallacy of the report is in its recommendation that the whole country be put to the loss of time and the overwhelming cost of procuring an amendment to the National Constitution, when it is obvious that such an amendment might ultimately be held to have been absolutely unnecessary. The conclusion that such national amendment may be necessary is based upon the fact that the committee assumes that there is real doubt upon the question and that it is better to "remove all doubt" by having passed an act of Congress and having an early judicial test in the U. S. Supreme Court of the constitutionality of such act. "Doubts" and "all doubt" upon a question are frequently removed by full argument and a little hard work in a test case; and a test case is much cheaper than a constitutional amendment.

The drafting of concrete legislation should logically precede work on the constitutional question at all events, and the actual drafting of such legislation might of itself greatly help to "remove all doubt" in any lawyer's mind as to its constitutionality.

In this connection we are fain to observe that there are probably not five members of this entire Association who are thoroughly qualified to draft national legislation on this highly scientific and mechanically technical subject without the aid of practical aviators or that of general experts in the science of aeronautics. The whole question, in other words, is scientific as well as legal. I do not know of a national association in aeronautics or aviation which is as definitely prominent in its own peculiar sphere as is this Association in the realm of law; but if there be such, the subject would be worthy of the joint consideration and work of both such a body and the American Bar Association. The call to service to both such bodies is equally clear and the privilege to undertake the work is equally the logical right of both.

I have a resolution which it may not be parliamentary at this time to present, since there is one substitute already before the house, but if that be voted down, then I would like an opportunity to present a resolution.

Resolved, That the report of the Special Committee on the Law of Aviation be received and ordered placed among the permanent records of this Association with the thanks of this body to the committee for its preparation.

Resolved, Second, That the President of the Association appoint a new committee of five members and that he also invite from any clubs or societies interested in the subject of Aviation, the appointment of a similar committee of five members of practical experience in aviation or in the science of aeronautics, such two committees to compose a joint committee with power to select an eleventh member thereof to act as chairman of said joint committee, said joint committee to make a report as to what national legislation is needed on the subject of aviation and present a draft of bills for introduction in Congress appropriate to subserve such purpose.

Resolved, Third, That when said report shall have been made the



## Notes on "Civil Aviation"

Executive Committee of this Association mail a copy of the same to each member of the Association.

Charles V. Inlay, of Washington, D. C. :

The proposition advanced by Mr. Booker that control over aviation is part of the admiralty jurisdiction, and the proposition of Major Davis that Congress can legislate on the ground that it has plenary jurisdiction would offer more or less consolation if they were adopted. If we were to assume that the Supreme Court would finally say that this was a matter of admiralty jurisdiction, or if we assume that the Supreme Court would overrule us, and say that Congress had plenary jurisdiction over the entire subject matter, interstate and intrastate alike, then the solution would be easy. But a careful reading of this report and a careful reading of the excellent article of Professor Bogert on the subject "because, in addition to drafting a tentative act in the Conference of Commissioners on Uniform State Laws, he has written a most illuminating article on the subject" a careful reading of all of those documents convinces me that this report must be taken to be the most practical in its offered solution of any that has been suggested. It plants its feet upon propositions that are demonstrable. We all know that the fundamental theory of the Constitution is that the powers not delegated to the United States are reserved to the states. We know, therefore, that as regards those matters that have been delegated to the nation, interstate commerce, the post-office, and such matters, Congress can legislate. We know, likewise, that as regards those matters that are reserved to the states, the states can legislate. These are axioms. If we proceed upon these axioms, if we ask Congress now to legislate upon those matters that are clearly within its delegated powers, and if we ask the states to legislate upon those matters which are clearly within their reserved powers, as in the law that Professor Bogert has drafted, then we are proceeding upon something that we are sure of. And if, in the process the Supreme Court were to say that the national government had plenary jurisdiction, I am sure Mr. Boston would bow to that and we would all say whatever may be the merits or the demerits of that solution as a constitutional proposition, it would furnish a way out.

I think we should adopt this report. If we reject it, we throw away the only basis of getting immediate progress.

Henry H. Glassie, of the District of Columbia :

I understand, Mr. Chairman, that the question before the house is on the substitute offered by the gentleman from Indiana, and, if I am correct, that substitute takes the definite position here on the question of constitutional law that the control of aviation is essentially, for scientific reasons, within the admiralty jurisdiction.

Now, upon that point, I think it will clarify our minds if we remember a remark of Mr. Justice Holmes "and it is for the purpose of reminding you of that remark that I arose" on a question not exactly the same, but sufficiently analogous. He made this wise observation :

## Notes on "Civil Aviation"

On a point like this a page of history is worth a volume of logic.

There is not a lawyer within the sound of my voice that does not know that when you come to deal with the jurisdiction of admiralty your starting point is bound to be historical and does not also know that there isn't the faintest likelihood of any court, supreme or otherwise, departing upon purely scientific analogy from the historic doctrine that admiralty means admiralty's navigation that was understood by the human race at the time that those words were put into the instrument.

I submit that to discuss this particular point upon any other basis is simply to embark ourselves for the realm of pure fancy, which may relieve the wearisomeness of this weather, but it can lead the Association to no result.

William P. McCracken, of Illinois:

There is no question that Mr. Boston has done the major portion of the work of this committee, and I have the utmost confidence in his ability to defend the report. But I cannot refrain from making one or two remarks before he closes regarding the arguments which have been advanced and the criticisms which have been made of the report.

In the first place, the questions presented by Mr. Booker in his substitute motion are questions which cannot be fully determined at a meeting of this kind, and I am satisfied that this gathering without a brief pro and con on that question would not attempt to commit itself to recommendations to the Congress. In the second place, the Air Convention, which Major Davis has suggested should be ratified by Congress and in which opinion I may say I concur should not be made a matter of action by this Association, because of the fact that it is so connected with the League of Nations and the Treaty of Versailles that to do so would be taking political action. Hence, that was left out of the report.

I agree heartily with Major Davis' desire for action in this matter. I, too, was a part of the air service of this country, a pilot and a flying instructor during the war, and, as I stand here before this meeting, I say that the air service of the United States Army is in need of a guardian ad litem.

And the lawyers of this country owe it to the profession and to our welfare, to the national defense, to see to it that it gets such a guardian. The recommendation of this report that I particularly want to call attention to is the first one. That states, in effect, that there are legal questions involved in connection with aeronautics, and that those questions must be solved before we can hope to have a satisfactory commercial development of aeronautics in this country. We cannot build up a national air force for defense unless it has the active support of commercial aviation. Therefore, we cannot shirk the double problem. First, the commercial one, and secondly, the patriotic one. We cannot shirk either of them when we give our time and our attention to the proper solution of this new question. I earnestly urge the defeat of the substitute and the adoption of the report presented by the committee.

## Notes on "Civil Aviation"

The Chairman:

Is there any further discussion? If not, Mr. Boston will close the debate.

Mr. Boston:

This was a new subject. The members of the committee sought information from every available source. They listened to every expression of legal view. They have themselves agreed upon none. It is obvious to me that those who have discussed this report have overlooked two things. In the first place, the footnote at the bottom of the first page, viz. :

So much that is controversial or open to future determination by the courts or otherwise is involved in the following report, that its conclusions are not to be taken as positive statements, but only as expressions of view tentatively advanced by members of the committee, subject to possible modification upon further consideration.

The committee has not been given credit for the slightest caution. Now, we have not asked the American Bar Association to express any opinion upon any subject. I think it would be a mistake to adopt this substitute proposed by the gentleman from Indiana. It does the very thing which this committee has carefully sought to avoid. It is scarcely necessary for me to say that when this conference was held in Paris and when the League of Nations was formed, and when the Air Convention was provided for by the commissioners attending the conference, no thought entered the mind of any man then ^ present that it could be asserted that the air was an ocean subject to international jurisdiction.

They conceded the contrary. You will find that so far as air navigation is concerned they not only conceded, but they provided for national regulation. They have gone so far, as I stated in presenting this report, as to provide that the craft from other nations of the earth cannot fly across their borders except under special and temporary permission unless they sign that convention.

The committee was bound to give you information. It was bound to suggest some solution ^ or some possible solution ^ of certain of the most intricate problems. If you will read with care you will find that the committee in the main fails to express any opinion, but merely points out the dangers and the suggestions that should be studied so that our action shall not be hasty and the Association shall not be improvidently committed to a false position.

What is called for by the substitute is something that will commit the Association beyond any possibility of retreat to a theory based upon the explanation that has been made here this afternoon ^ an explanation which caused laughter, and did not receive the careful consideration with respect to its fallacy that any other situation would have demanded.

We have four propositions here, and they are all tentative. Even to that extent, two of the members of the committee have found

## Notes on "Civil Aviation"

it advisable to qualify further the views that are expressed there, for fear that somebody might misunderstand the report, as certain of the speakers here have.

So far as the facts in the report are concerned, they are statements of fact which have been ascertained by the committee, and they are just simply laid before you. As far as the opinions in the report are concerned, they are tentatively advanced by each member of the committee.

You have heard Mr. Davis, and you have heard Mr. Bogert, and, if I interpret their remarks aright, they are diametrically opposed in their opinions as to the extent of the power of the Congress of the United States. We do not think this is the proper tribunal to solve such a difference of opinion. We have no desire to insist upon either the third or the fourth recommendation. I leave that to the good judgment of this Association, but I call attention to the fact that it is the expression of a hope on the part of the American Bar Association that those who are charged with the investigation of these bills which are to be laid before Congress by interests "no interest is represented now before you, but interests have laid things before Congress, and Congress should be safeguarded by having its attention called to the fact that there are these questions. All that we say as a body is, that because of these serious questions we hope they will be carefully looked into and considered.

The substitute motion of Mr. Booker was then put and lost.

Homer Albers of Boston Mass. :

While I have the greatest respect for my friend, Mr. Boston,

I think there are some matters in this report which should be

corrected; and, therefore, I offer this substitute :

That the American Bar Association urges upon Congress to enact promptly such laws as to regulate aeronautics and communication through the air as are within its Constitutional powers.

The substitute was seconded.

Mr. Boston :

I see no inconsistency between what Mr. Albers is pleased to call a substitute and the recommendations of our committee. But I suggest to him, that we ought first to consider the original resolution, in its several parts, to determine whether the report shall be used as a document for information or not.

The substitute motion of Mr. Albers was then put and lost.

The Chairman:

The question now recurs upon the adoption of the report as originally made together with the resolutions and recommendations. All in favor of their adoption will say aye; opposed, no.

## Notes on "Civil Aviation"

The ayes seem to have it, the ayes have it, and they are adopted.  
(For Report, see Appendix, page Jt98.)

Mr! Cahill, of Michigan :

I desire to offer the following brief resolution :

Resolved, That it is the opinion of the members of the American Bar Association, in convention assembled in the City of Cincinnati at its Forty-Fourth Annual Meeting that the Forty-Fifth Annual Meeting and succeeding annual meetings of the Association be held in some city or cities with either a higher altitude or with a latitude and longitude more closely approximating that of the so-called north or magnetic pole, and that the Secretary of the Association be and he is hereby directed to transmit a copy of this resolution to the Executive Committee at its mid-winter meeting.

The Chairman :

Under Article III of our By-Laws that resolution will be referred to the Executive Committee.

### REPORT

#### OF THE

#### SPECIAL COMMITTEE ON THE LAW OF AVIATION/

To the Executive Committee of the American Bar Association:  
Recommendation.

We recommend, if the Executive Committee approve :

1. That the members of the American Bar Association be requested to give their attention to the fundamental problems of jurisprudence and especially of constitutional law, involved in the proper solution of the demands of aeronautics.
2. That a copy of this report, as the report of this committee, be placed in the hands of the President and each member of Congress, and each member of the National Advisory Committee for Aeronautics, and in the Library of Congress and of the Smithsonian Institution, and that two copies be given to each of the Commissioners on Uniform State Laws, and that one thousand additional copies be made available for distribution to those especially interested in the subject, to the end that its subject matter may be duly considered in the enactment of any legislation.
3. That the American Bar Association at the annual meeting express its hope that in the enactment of any legislation by Congress the most careful preliminary consideration be given to the constitutional features of any proposed legislation, to the end that it may be determined whether the proper development and regulation of aeronautics does not require a constitutional amendment conferring complete jurisdiction over aeronautics upon the United States through its appropriate departments, instead of attempting to adopt devices of questionable constitutionality to make existing national powers apply to this new branch of human activity; and that meanwhile all national legislation studiously

## Notes on "Civil Aviation"

observe the existing constitutional limitations, and preserve without assault the existing division of powers between the United States and the states of the union; and that all constitutional state legislation involving matters not purely of local interest and application shall be studiously made uniform.

\* So much that is controversial, or open to future determination by the courts or otherwise is involved in the following report that its conclusions are not to be taken as positive statements but only as expressions of view tentatively advanced by members of the committee, subject to possible modification upon further consideration. 4. That the committee be continued as a special committee of the Association.

Introduction.

This committee, designated as the Special Committee on the Law of Aviation, was appointed, pursuant to the action of the Executive Committee, at its meeting in St. Louis, immediately following the annual meeting of the Association in 1920.

The Committee's Preliminary Report.

The committee made a preliminary report to the Executive Committee at its meeting in New Orleans in January, 1921. That report was chiefly valuable for the bibliography which was annexed, containing lists of published articles upon the law of aeronautics and the sources from which the information was obtained. Copies of the report have been in demand from many public libraries, and officials and individuals interested in the subject matter, and the chairman of the committee has had much correspondence.

As this final report for the current first year of the existence of this committee is likely to have a still wider circulation, we repeat some of the information in the preliminary report.

Other Committees.

The Conference of Commissioners on Uniform State Laws in August, 1920, adopted the following resolution under which a committee has been appointed :

The whole world has come to a realization of the fact that aviation is practical and not a mere art or fad for pleasure and profit in exhibition flying, for many states in the union now have scores of aviators constantly flying from state to state carrying commerce between the states, which aviation needs regulation, so your committee recommends the appointment of a special committee to investigate this subject and report as soon as practical a uniform aviation law.

Since our preliminary report the New York State Bar Association and the New York County Lawyers have each appointed a committee to consider and deal with the law of aeronautics. The Aero Club of America, as the direct result of the action of the Executive Committee of the American Bar Association in providing for our committee, appointed a committee of lawyers to cooperate, which is composed of lawyers with especial experience either as actual fliers or as counsel for those who have been

commercially interested in the development of the art.

The Inobiasing Public Interest and the Impoetant

PtJNDAMBNTAL PbOBLEM OF JURISDICTION.

Not to mention the numerous commercial interests involved and the various periodicals devoted to the subject, the increasing interest is illustrated by the following list of aero clubs in the United States and Cuba, which has been furnished to us through the Aero Club of America:

Aero Club of Oregon, Portland, Ore.

Yolo Fliers Club, Woodland, California.

Aero Club of Lincoln, Lincoln, Nebraska.

Aero Club of Texas, Houston, Texas.

Aerial Club of Indiana, Terre Haute, Indiana.

Washington Aviators' Club, Washington, D. C.

Aero Club of Omaha, Omaha, Nebraska.

Aero Club of New England, Boston, Mass.

Aero Club of Ohio, Canton, Ohio.

Aero Club of St. Louis, St. Louis, Mo.

Aero Club of Buffalo, Buffalo, N. Y.

Aero Club of Pittsfield, Pittsfield, Mass.

Aero Club of Dayton, Dayton, Ohio.

Kansas City Aero Club, Kansas City, Mo.

Harvard Aeronautical Society, Harvard University, Cambridge, Mass.

Aero Club of Illinois, Chicago, Ul.

Aircraft Club of Peoria, Peoria, 111.

Aero Club of Michigan, Detroit, Michigan.

Milwaukee Aero Club, Milwaukee, Wis.

Western Aero Association, Topeka, Kansas.

Pacific Aero Club, San Francisco, California.

Aero Club of Rochester, Rochester, N. Y.

Aero Club of Penn ^ Ivania, Philadelphia, Pa.

Aero Club de Cuba, Havana, Cuba.

Queen City Aero Club, Cincinnati, Ohio.

Wichita Aero Club, Wichita, Kansas.

Aero Club of the Northwest, Seattle, Wash.

Aero Club of Iowa, Grinnell, Iowa.

Colorado Aero Club ^ Denver, Colo.

Aero Club of Hawaii, Honolulu, H. I.

Aero Club of the Philippines, Manila, P. I.

Aero Club of Southern California, Los Angeles, Cal.

Aero Club of Massachusetts, Boston, Mass.

American Flying Club of Virginia, Richmond, Va.

American Flying Club of Baltimore, Baltimore, Md.

Aviation Country Club of Detroit, Detroit, Michigan.

No one can examine the list of publications annexed to our former preliminary report (to which we now direct attention without reprinting it) without an appreciation of the vast importance of a comprehensive view of the problem in jurisprudence which is presented. This is peculiarly true in the United States on account of the division of power between the national government and the states.

Many persons interested in the practical development of flight through the air have no conception of the existence, at the threshold, of a constitutional problem arising from this division of power; they are impatient of our apparent inaction; and practically with one accord they appear to look to the national government for relief; they see other governments active with international conventions and national laws, and cannot and do not care to comprehend why anyone hesitates to believe that the powerful government of the United States has not every power which any other government exercises to promote and to regulate air flight.

These people ^ anxious for immediate results ^ are not impressed that there ought to be any embarrassment or any hesitation in determining what government should legislate or that it has complete and unlimited power, howsoever there may be doubt as to the precise terms of any law or as to the place where or the organization under which proper development or proper regulation should proceed and be maintained.

For example, the recent ordinance of the City of New York (approved February 23, 1921, No. 31, "An ordinance in relation to the operation of aircraft over the City of New York" ^), to secure the safety of its people against improper flying over the city, appears to concede without doubt or question the ple-



nary power of Congress to regulate local flight, by providing that it shall be in force until Congress legislates, " at which time the provisions of this ordinance shall automatically cease and become void ^"; thus apparently exhibiting impatience that Congress has not already acted, and providing that the life of the ordinance shall expire with Congressional action. This illustrates the mood of those who are impatient for commercial results and for commercial opportunities and who are unconcerned for constitutional problems, or constitutional limitations, and who are indifferent to the preservation of the reserved rights of the states or their people. They see that the problem of flight is peculiarly a problem of uniform law, and they naturally look to a unitary source for a uniform law. They cannot conceive that one national government and 48 state governments can legislate efficiently for the one subject matter, flight and its incidents. And when it comes to local ordinances regulating overhead flight, it can readily be perceived that any people who are so organized as to permit or to compel regulation of air flight by local ordinance, are headed for a confusion which will retard the development of the art. They reason that unity of fundamental control is obviously essential and that any nation which is so organized as to preclude this, or to admit of confusing interference of rule, cannot properly compete in the race of aeronautical development. They urge that the United States is a nation and should have the essential powers for the complete regulation of air flight, since such flight must develop internationally along national lines, and thus far has so developed. But having stated their point and made their argument apparently upon a base of economic truth, they concede and indeed insist as a matter of economic necessity and essential reality that the United States has the power, instead of merely urging that it should have the power. Constitutional problems and fundamental theories respecting an indestructible union of indestructible states, each operating within its own sphere of sovereignty, with the national government a government of delegated powers and all other powers reserved to the states or the people, make no appeal to those who are impatient to see the actual commercial development of air flight and who recognize, or think they recognize, its possibilities ; and who also recognize that the economic barriers now existing to such development are barriers whose foundation is law, or uncertainty of law, or absence of law.

Military or postal flight and the military or postal development of flight (at least theoretically) present no substantial problems of constitutional law; though there are wide differences of opinion respecting the problem of organization, illustrated by the many projects before Congress, concerning methods of organization, whether of a single and separate department, or several bureaus in different departments, or a single bureau under a single department.

But, though pending bills before Congress, existing and pending state legislation, and existing municipal ordinances, all essay to regulate civil flight, as if each legislative body had control of the subject with which it deals, there is, of course, in the field of jurisprudence, a fundamental and serious problem, arising out of the inherent nature of our dual organization of government into national and state, with the former a government of dele-

gated powers and the latter or the people, not only presumptively, but explicitly (10th amendment to U. S. Constitution) still possessed of all of the powers not delegated to the United States " by the Constitution nor prohibited by it to the states/

The Constitution neither expressly delegates to the United States powers over air flight as such nor prohibits them to the states; presumptively, therefore, they still reside either with the states or the people, but they do not reside with the United States nor with Congress.

If the United States or its Congress as a legislative body has the power, it must be because in a specific case air flight falls within the scope of some other power ; such powers are obviously the power to make treaties, to maintain international relations, to control interstate commerce, to raise revenue. In the exercise of any of these powers, or as incidents to their exercise, Congress might legislate more or less effectively, yet not without an extension of the power, or a judicial stretch of the imagination respecting the legitimate scope of the power, could complete control of air flight be exercised by the national government or any of its functionaries.

There are those who maintain that air flight is comprehended within the admiralty and maritime jurisdiction of the United States (Constitution ^ Art. III, sec. 2). Without discussion the Conference of Delegates from State and Local Bar Associations at Boston on September 2, 1919 ^ adopted a resolution to appoint a committee to investigate the subject further, but expressed the sense of the Conference that aeronautics and aerographj "should Ue within the admiralty jurisdiction of the United States and should be entertained accordingly. ^ ' But it would seem that the Constitution recognizes admiralty and maritime jurisdiction as something existing, not something to be created, and extends the judicM power to it. We are not unmindful that the judicial concept of what admiralty and maritime jurisdiction is has broadened in the United States to include all navigable waters. (The Propeller Qenessee Chief vs. Fitzhugh, 12 How. 443, 13 L. Ed. 1058) ; nor are we unmindful that Congress, besides its enumerated powers, has general power (Constitution, Art. I, sec. 8) to make all laws for carrying into execution "all other powers vested by this Constitution in the government of the United States, or in any department OT o&cer thereof ." We have seen a gradually expanding assertion or exercise by Congressional legislation of power over matters which are\* not expressly stated by the Constitution to be within the powers delegated to the United States, the most noteworthy of which, perhaps, is the regulation of the prescription of habit-forming drugs by medicaJ practitioners, under the guise of revenue legislation (Harrison pure food and drug law) ; and we have seen a corresponding willingness in the judicial authorities to recognize this tendency to expand as a constitutional exercise of power. So that no one, though he be sworn to uphold the Constitution (Art. VI) (including, we assume, its tenth amendment declaratory of the reservation of powers to the states or to the people), can with assurance predict the fate of an Act of Congress asserting or assuming that air flight is within the admiralty or maritime jurisdiction. Yet there are obvious arguments against it, which we need not repeat.

Those advocates of this view who base it upon the analogy of air navigation to ocean navigation, and of the atmosphere to the high seas, appear to overlook the current international recognition of sovereignty over the air above the land. The complete analogy of the air to the high seas having failed to receive international recognition, it would seem unlikely that such analogy could be successfully utilized to support a claim of admiralty or maritime jurisdiction over the air.

There would, too, be embarrassments in the recognition of such jurisdiction with its present limitations. Abundant illustrations of these limitations are collated in the Air Service Information Circular of February 26, 1921, pp. 15-18, and in Professor Bogerts' article on Problems in Aviation Law, pp. 34-35, both hereinafter mentioned. Hydroaeroplanes have, however, already, while afloat in water, or as capable of such flotation, been treated as within the maritime jurisdiction. (*Libel in S. D. of N. Y.*—verbally reported by Mayer, D. J., to chairman of this committee.) But aeroplanes have been judicially determined not to be. (*The Crawford Bros.*, No. 2, 216 Fed. R. 269. See 28 Harv. Law R. 200, 3 Cal. L. R. 143, 49 Am. L. R. 599.)

It appears to us that it would be undesirable for the development of the art of civil flight through the air to assume that jurisdiction over it rests within the constitutional extension of the judicial power of the United States to admiralty and maritime jurisdiction, with the constitutional general grant of power to Congress to make laws for carrying into execution the powers vested by the Constitution in the government of the United States or any of its departments or officers.

While we also recognize that as incidental to the power to lay taxes, or to regulate interstate or foreign commerce, or to pass laws to carry out the provisions of treaties, or in the exercise of other specific powers, Congress may legislate respecting air flight, we also recognize that without an unprecedented extension of the claims of the exercise of constitutional power, and unprecedented judicial recognition of an unprecedented claim, there can be no complete control of the subject matter by national legislation.

From the purely theoretical standpoint of the dual division of sovereign powers, there is no reason why the respective spheres should not be left within the present constitutional limitations, with attempted legislation, judicial decision, and actual experience to shape their ultimate configuration. But any such method, in our judgment, overlooks the immediate and practical demands of the situation.

So far as our investigations or information indicates, while there is a practical demand that Congress shall legislate promptly and comprehensively, there is no similar demand that the Constitution shall be so amended as to make such assertion of power unquestionably constitutional. It seems to us that this is because the economic demands are known only to those who are untrained along the lines of jurisprudence and constitutional law, and those who know these aspects of the problem are unaware of the economic demands.

## Notes on "Civil Aviation"

When representatives of this committee have conferred with those who are practically interested in the commercial development and have suggested the advisability of a constitutional amendment to put into effect a power which they have universally declared to be an economic necessity, those interested commercially have expressed a preference for the immediate exercise of the existing powers of Congress, with the possible result of unconstitutional legislation, over the more certain method of constitutional amendment to extend the powers of Congress. They seem to think that the necessities of the situation, eked out by specious arguments from such powers as Congress has, and by the claim of complete control in consequence, will practically be more efficacious than any effort to awake the people and their legislatures to that degree of enthusiasm which will carry through a constitutional amendment. We have found no disagreement among them that the exercise of the national power is imperative and that the conflicting exercise of state and local power will be destructive of the progress of the art and its commercial development.

It appears to us that neither the public nor the legal profession is alive to the demands of the situation. There is a prevalent tendency to regard the problem as primarily if not exclusively a military problem; whereas in fact it is primarily a commercial and economic problem, with grave incidental features which lie in the domain of jurisprudence and law, and demand the aid of jurists and lawyers. The necessity is the problem of those interested in the art; the method is a joint problem of these and the legal profession. And in our judgment the unquestionable method is a constitutional amendment conferring the power on Congress to legislate respecting aeronautics and aerography. Any other method will be the method of indirection, subterfuge and consequent conflict; and such indirect methods, though they appear to have been the methods of national growth in our body politic, are fraught with the danger, which is constantly manifest, of practical repeal by aggression and in an unconstitutional way of those constitutional limitations, which are our fundamental bill of rights—the main feature of that monument of our institutions, the Constitution.

We would emphasize, therefore, as the two fundamental juristic problems of aeronautics in this country :

Whether control should be exerted by the national government; and

Whether the power of such control should be conferred by constitutional amendment, or seized under the claim of the exercise of existing powers. The members of this committee having been severally sworn as a condition to admission to the practice of law, to support the Constitution of the United States, and having an affectionate regard for that instrument with its bill of rights, are unanimously of the opinion that if complete control over aeronautics is to be lodged in the national government for exercise to the extent which may from time to time be deemed expedient, the power should be conferred by constitutional amendment and should not be seized in the guise of the exercise of existing powers. Every exercise of existing powers which goes beyond the obvious or necessarily implicit extent of these powers is fraught not only

with the visible danger of attack on the ground of unconstitutionality and of invasion of the essential or reserved powers of the states ^ but with the more insidious danger of a further weakening of constitutional limitations deliberately incorporated in the bill of rights which is the very groundwork of the Constitution and its earlier amendments.

Since ^ so far as we are advised, it appears to be the unanimous judgment of those practically interested in the development of the art of flying, that the demands of progress require a uniform law operative throughout the country, and emanating from a single source of power; and that the national government is obviously this single source ; and that no uniform law, uniformly interpreted and uniformly administered, can be expected from the joint or similar action of one national legislature and the federal courts and of 48 state legislatures and the state courts; it necessarily follows that if this judgment is to be followed the national government should be vested with the power, to be exercised, as we have already said, from time to time as may be deemed expedient. It may appear expedient in the early stages of the art, and until otherwise demonstrated by experience, that many features of regulation of peculiarly local interest shall be suffered to be locally regulated; a method which finds analogy and illustration in the early history of the cautious exercise of the Congressional power to regulate interstate commerce.

#### The Practical Bearing of Law on Aeronautics.

To those who are unfamiliar with the problems inherent in the development of the art, it may seem that the problem of jurisdiction (which we have made paramount) and the problem of law are good enough things for lawyers to wrangle about, but that they have no practical bearing upon the success of the art or its commercial progress.

As the result of such information as has come to us from practical sources, we are impressed that at present the legal problem is the most serious one which exists. And the reason for this lies in the fact that while already the mechanical problems have been fairly well mastered for the early stages of an art which has been developed in these features with marvelous rapidity, the law has, in this country at least, been entirely undeveloped, and behind this fact lies substantially the whole problem of successful commercial development, as we shall later indicate.

But we shall pause to invite attention as an illustration of the extent of the mechanical development, to the six annual reports of the National Advisory Committee for Aeronautics (Washington, Government Printing Office, 1915-1920), and to the amazingly large bibliography of the subject from July 1, 1909, to December 31, 1916, containing 1493 pages, and lists of approximately 40,000 publications, compiled by Paul Brockett and issued from the Government Printing Office, 1921, pursuant to act of Congress, July 1, 1918. Of course the possibilities of military use received abundant verification during the war; while the current use for postal purposes and the few Unes already established for pleasure flight demonstrate larger possibilities.

Regular commercial flight has now been established between London and Paris, and has been much patronized by Americans travelling between the two cities. From time to time the newspapers have contained reports of other lines established over parts of the continent of Europe. So far as we are advised only a very few, if any, regular commercial lines, and these purely for pleasure flight, have been established in this country, and the backwardness of our commercial development has been the subject of unfavorable comment. Wherever we have inquired as to the cause of this we have been met with the same answer: the fault is with the law.

So that, so far is the law from being merely a matter of speculative amusement for theoretical lawyers, our inquiries have led us to believe that the law respecting aeronautics is the one fundamental vital problem of the actual commercial development of the art at the present time. And the reasons are wholly commercial and the result of hard headed though conservative business sense. The utter uncertainty of the law makes the risk incalculable, and accordingly dissuades the investment of capital. Without capital readily available, the adequate development of commercial flight is practically impossible. Capital may be and has been persuaded to embark in manufacturing, but capital must be induced to embark in purchase and operation. Closely linked with capital is insurance, for capital, except of the most speculative kind, cannot be induced without that distribution of risk which insurance permits. Yet insurance is dissuaded very largely because of the uncertainty and conflict of laws, whose application is beyond the power of prediction; actuarial acumen may calculate the risks of flight within some sort of limits from available experience, but no actuarial acumen can imagine the incidental risks of altogether uncertain law.

The insurance interests have been alert. In July, 1920, the National Aircraft Underwriters Association was formed with headquarters in New York, and we have been in communication with their representatives.

So far as we are advised, the embarrassments arising from the state of the law may be conveniently attributed to the following specific difficulties in law :

The uncertainty as to what the law is governing any particular datum.

The lack of any uniform law.

The conflict of laws.

The insufficiency of law.

The hazard of unregulated flight.

The hazard of undefined responsibility.

The hazard of personnel in unlicensed or unequipped or inadequately equipped pilots.

The hazard of deficient air worthiness of aircraft.

The bugaboo in the legal or supposed legal maxim, "Cujus est solum, ejtts est usqtLe ad coelum"

Together these make up a bunch of uncertainties and a bunch of embarrassments, which make the proper conduct of the business of air craft insurance extremely difficult if not impossible. New York has by statute authorized the formation of such companies and insurance against loss occasioned by and to aeroplanes (Laws 1919, ch. 391-393). As for the licensing of pilots, so far as we are advised, this has been done hitherto in this country (save in Massachusetts, Law 1913, ch. 663; 1919, ch. 306; Connecticut, Acts 1911, c. 86, Gen. Stats. 1918, c. 176, sees. 3107-3117, and Oregon, 1921, c. 45, where statutory provision for licensing is now made) by a private membership corporation of New York, the Aero-Club of America, which has thus far granted 6806 licenses :

4973 aviation  
764 hydroaeroplanes  
931 spherical balloons  
138 dirigibles

6806

Its licenses, we understand, have been recognized in international sport by reason of its affiliation with the Fédération Aéronautique Internationale, which it represents in the United States. This federation, founded in 1905, issues its "Statuts et Règlements Généraux." It has held numerous conferences in different cities of Europe and has affiliated clubs in 18 countries. But now the licensing of pilots has, since the international conventions on aeronautics (as a result of the work of the International Commission dealing with aerial navigation and appointed as a sub-commission of the Peace Conference), become a matter of serious international import. This fact, illustrated by the recent attitude (as appears in the newspapers) of the Canadian Government, under the terms of the international convention to which it is a party, in intimating a purpose and a duty to exclude fliers from the United States who are unlicensed under a law; a situation which, as we are advised, has been somewhat mitigated by a temporary arrangement, the necessity for which is a sufficient commentary alike upon the inadequacy and the rudimentary condition of our laws and our legal concepts concerning aeronautics.

We are advised also that the Air Board of Canada has signified a willingness, within its powers, to manifest a liberal spirit in the encouragement of international flight between the United States and Canada. But at the time of framing this report we have been unable to get full information of the actual present conditions.

The British

1. *Air Navigation Act(s)*,
2. *Air Navigation Regulations*, and
3. *Air Navigation Directions*

afford an example of the extent to which complete legal regulation has gone elsewhere, and are in striking contrast to our legal inactivity.

1. Air Navigation Act 1911, 1 and 2 Geo. V, c. 4;
2. Air Navigation Act 1913, 2 and 3 Geo. V, c. 22;

## Notes on "Civil Aviation"

3. Air Navigation Act 1919, 9 Geo. V, c. 3;
4. Air Navigation Act 1920, 10 and 11 Geo. V, c. 80;
5. Air Force (Constitution) Act 1917, 7 and 8 Geo. V, c. 51;
6. Air Navigation Regulations 1919, No. 625;
7. Air Navigation Directions 1, 1919.

In our first preliminary report to the Executive Committee (January 3, 1921) we mentioned that certain (sporadic and incomplete and inexhaustive) laws or ordinances had been enacted in the United States, which we now enumerate more definitely :

In Connecticut, to regulate operation, June 8, 1911 (now Gen. Stats. 1918, ch. 176, chs. 3107-3117).

In Massachusetts, to regulate operation, July 12, 1919 (Gen. Acts, ch. 306, superseding Act 1913, c. 663).

In Hawaii, to prohibit unlicensed operation. Laws 1917, Act 107.

In California, to prohibit use in hunting, 1919, ch. ZOO.

In Michigan, to prohibit use in hunting. Pub. Acts 1919, No. 82.

In Texas, to authorize construction, etc., corporations 1919, ch. 9.

In Washington, to provide for maintenance of facilities by local governments, 1919, c. 48.

In Wisconsin, to provide county stations for aircraft, 1919, c. 613.

In New York, 1919, chs. 391-393, to permit insurance.

In Los Angeles, Cal., local ordinances.

Newark, N. J local ordinances.

Atlantic City N. J local ordinances.

Nutley, N. J., local ordinances. and

Kissimmee, Fla., local ordinances.

Since that time our attention has been called to the ordinance of February 23, 1921, regulating flight over New York (City, and to the comprehensive law of Oregon, 1921, c. 46, for a board of aircraft examiners and the regulation of flying and registering of aviators.

In our said preliminary report we enumerated the bills and resolutions pending before Congress consisting of list of matters pending before Congress relating to aviation, not including matters relating to specific plants, specific inventions, particular projects and the like :

Senate: No's.

2093, Mr. New, July 31, 1919, to create a Department of Aeronautics, etc. Referred to Committee on Naval Affairs.

4478, Mr. Keyes, June 1, 1920, to create a Bureau of Aeronautics in the department of the navy. February 2, 1921, reported without amendment.

Joint resolution 56, October 21, 1919, to enable United States to participate in the work of the International Aircraft Standards Commission. Passed the Senate.

House of Representatives: No. 4409, Mr. Kahn, June 2, 1919, authorizing the President to make regulations, etc., covering participation by the United States in the work of the International Aircraft Standards Commission.

No. 7925. Mr. Curry (California), July 28, 1919, to establish a Department of Aeronautics, etc.

No. 9804, Mr. Curry (California), October 8, 1919, to create a Department of Aeronautics, etc.

No. 10108, Mr. Kahn, October 22, 1919, to establish an aeronautical experimental, development and engineering plant for the air service.



## Notes on "Civil Aviation"

No. 10252, Mr. Kahn, October 29, 1919, to provide for the assistance of service aviators in distress, etc.

No. 13803, Mr. Kahn, April 27, 1920, to make more effectual provision for the aerial defense of the United States, etc.

No. 12134, Mr. Hull (Iowa), January 29, 1920, to create a Department of Aeronautics, etc.

No. 14061, Mr. Kahn, May 13, 1920, to regulate air navigation within the United States and its dependencies, and between the United States or any of its dependencies or any foreign country or its dependencies.

No. 14137, Mr. Hicks, May 19, 1920, to create a Bureau of Aeronautics in the Department of Commerce, etc.

H. R. 1428, Mr. Tilson, for the protection of aircraft industry from unfair foreign competition.

Since that time the following have been introduced and are, so far as we are advised, still pending :

Senate 656, Mr. Keyes, to create a Bureau of Aeronautics in the Department of the Navy.

H. R. 16151, Mr. Curry, February 24, 1921, to create a Department of Aeronautics, defining the powers and duties of the secretary thereof, providing for the organization, disposition, and administration of a United States air force, and providing for the development of civil and commercial aviation, the regulation of air navigation and for other purposes.

H. R. 201, Mr. Kahn, April 11, 1921, to regulate air navigation within the United States and its dependencies, and between the United States and any of its dependencies and any foreign country or its dependencies.

H. R. 202, Mr. Kahn, April 11, 1921, to make more effectual provision for the aerial defense of the United States and to provide for the concentration of the national air strength.

H. R. 271, Mr. Hicks, April 11, 1921, to regulate air navigation within the United States and its dependencies, and between the United States or any of its dependencies and any foreign country or its dependencies.

H. R. 273, Mr. Hicks, April 11, 1921, to create a Bureau of Aeronautics in the department of the navy.

H. R. 281, Mr. Hicks, April 11, 1921, to create a Bureau of Aeronautics in the Department of Commerce, and providing for the organization and administration thereof.

H. R. 4395, Mr. Curry, April 19, 1921, to create a Department of Aeronautics, defining the powers and duties of the secretary thereof, providing for the organization, disposition and administration of a United States air force, and providing for the development of civil and commercial aviation, the regulation of air navigation, and for other purposes.

H. R. 5219, Mr. Hicks, April 26, 1921, to create a Bureau of Aeronautics in the Department of the Navy.

The practical problem of the form and extent of the necessary legislation involves so much technical detail and has received and is receiving so much discussion before Congressional committees and otherwise that we do not feel that it behooves either this committee or the American Bar Association to become the advocates or the framers of any specific bill or form.

This Committee's Function.

It seems to us that this committee's function may properly

be limited, for the present at least, to the gathering and reporting of appropriate information, and indicating in a very general way the fundamental problems of jurisprudence and of law. This we have endeavored to do, without suggesting the character of the legislation.

#### Private Ownership of the Air.

There is one prepossession which we have mentioned: the bugaboo in the legal or supposed legal maxim, "Cujus est solum, ejus est usque ad caelum" Since this maxim and its possible application offer one of the most substantial grounds for the apprehension of embarrassment in the adequate encouragement of commercial air flight, we think that it behooves jurists to consider the history and limitations of the maxim, to the end that its correct limitations may be well understood. And without undertaking to brief the subject we venture the suggestion that the proper fundamental limitations of the application of the maxim will possibly be found in the development and application as a just and proper corrective, of a less well-known principle, which was, however, it appears, applied as a matter of public and common right in the early history of the law of roads, in which the element of passage or going, or the journey was the controlling concept of right to which the private right of ownership adjacent to or even underlying the road was made subordinate in case of necessity. The right to go was (in the terms of this principle) deemed a right dominant over the right of adjacent ownership, and hence, if a highway was blocked, it was a part of the public right of which a traveller by the highway might avail himself as matter of individual right, to use the adjoining private property even if necessary to the extent of trampling down the growing crop, in order to persist in the journey; and so, in a legal sense, the road is the journey, and not merely a fixed location within definite boundaries. And so ^ it was

recognized as a principle of English law that when the journey required, the private right was subordinate to the common right (see the thought in Norman French, Rollers Abridgement, p. 392, A. D. 1668, quoting from case in Trinity Term 10 Charles I; Year Book 2 Edw. IV, p. 9; Viner's Abridgement (1791), vol. 4, p. 503; 2 Sheppard's Abridgement (1676), p. 206). We suggest that in this principle, if further investigated, lies perhaps, the existing and recognized, but little utilized ground, upon which the private right may, be limited without violence to the existing law of private property. In making the suggestion we are not unaware that if the analogy of the law of roads is followed, there would be the troublesome assumption (Bacon's Abridgement-Highways) that outside of the four ancient "highways" of England {quattuor chemini ^ Watling Strete, Ikenilde Strete, Fosse, Erming Strete), the other roads {chemini minor es ^ county roads ^ and viae vicinales ^ local roads) are supposed to have been made through private persons' grounds on writ of ad quod damnum (Bacon's Abridgement ^ Title Highways). But we wish to direct the attention of the profession and of legislators to the possible channels in which will be found material for combating the contention that in its practical application the private landowner has it within his legal power, through the operation of the maxim "Cujus est solum, ejus est usque ad coelum" to embarrass if not to kill the reasonable development of

flight for commercial if not for military purposes, though we confess that the maxim itself does not in terms at least admit of the invasion of private right in time of peace for military reasons. We recur below to this same subject in discussing a recent publication.

While our first preliminary report above mentioned shows an extensive bibliography of publications upon the law of the air, two notable reviews of the legal questions involved have since

appeared: "Problems in Aviation Law" in the Cornell Law Quarterly (vol. VI, p. 271), by George Gleason Bogert, professor of law in the Cornell University College of Law and a member of this committee and of the Committee on Aviation of the Conference of Commissioners of Uniform State Laws; and the Air Service Information Circular (vol. II, No. 181, February 26, 1921) on aviation, published by the Chief of Air Service, Washington, D. C., containing "Legal Questions Affecting Federal Control of the Air," consisting of : " Discussion of Legal Questions Affecting Federal Control of the Air " and Briefs on " Admiralty and Maritime Jurisdiction," " Limitation of Judicial Power of United States." " Force and Effect of Treaties as the Law of the Land/" " Taking Property for Public Use/" " The Use of the Interstate Commerce Provision of the Constitution/" and "Bibliography of Legal Aeronautics/" (Washington, Government Printing Office, 1921.) These two discussions are probably the most exhaustive, as they are the latest treatment of the legal and constitutional problems involved in the effective regulation of aeronautics in the United States. The Travelers Insurance Company and the Travelers Indemnity Company of Hartford, Conn., have jointly issued a monograph entitled " Airplanes and Safety," which emphasizes the necessity for uniform and stringent laws governing the licensing of pilots, the construction and use of aircraft, and the conduct of air-navigation generally.

#### The Air Service Information Circular and its Briefs

In the "Air Service Information Circular" Major Elza C. Johnson, of the United States Army, legal adviser to the air service, in discussing the legal questions recognizes that no more can be done by the federal government than the Constitution especially delegates (a proposition which, though undoubtedly true from the standpoint of any student of constitutional law, appears to have received scant consideration or scant respect from those who are impatient for results) . Major Johnson closes his discussion with a recommendation, as we have already done above, for a constitutional amendment granting control to the national government. And he bases his recommendation not only upon his recognition of the primary principle of constitutional law above mentioned, but upon the proposition of practical expediency that now the people are willing to grant the power, but later the claims of property owners may become so prominent that every power will be invoked to make users of the air pay tribute for the privilege. His closing paragraph and his specific recommendation for a constitutional amendment are as follows :

" It would appear, therefore, wise to study well the rights of the individual, who, after all, is the sovereign power, and, knowing these rights, exercise an effort to establish by popular grant, to the state and to the federal government, the right to control

the traffic of the air.

" In my opinion this can be done by bringing to the foreground the issue : the use of the air for transportation of mail, freight, and passengers, and the need of universal understanding as to codes and signals and landing field regulations for the safety of the operators, the passengers, and the owners of the earth.

It would, in my opinion, be disastrous to raise the question of the value of private ownership at all, either in the courts or in a campaign for constitutional grants. The grant should, I believe, be by constitutional amendment in something like the following:

" \* Congress shall have power to provide for regulating the use for air travel of all air space over the earth and within the borders of the United States and its territories, and all countries over which the United States has jurisdiction, including the 3-mile limit on the sea; and to provide for regulations of landing fields, a fixed code of signals, and signs for the navigation of the air and the landing of aircraft. Congress shall have further power to provide for the enforcement of said regulations and establish air admiralty courts, or grant to the existing courts the jurisdiction of the admiralty law of the air, which jurisdiction shall include the punishment of all crimes committed on aircraft, whether in the air or in port at landing field, and over all civil cases over which admiralty courts now, or hereafter, generally have jurisdiction, which have their source in air travel.' "

In our judgment, while we believe that recourse to a constitutional amendment is desirable, the greatest care should be taken to make it amply comprehensive. It should be remembered that the art is in its infancy and its incidents as we now know them may soon become antiquated; therefore the constitutional power should not be so phrased as to prove restrictive instead of adequate in its operation. A conscientious endeavor should be made to adapt any constitutional amendment to the possibilities of the art.

The briefs annexed to the Air Service Information Circular establish or tend to establish the following propositions, and they are valuable collations of the pertinent authorities (the matter in brackets being the observations of this committee) :

Admiralty and maritime jurisdiction, though granted in this broad phrase, is subject to many limitations, adjudged by the courts in defining what such jurisdiction includes.

[We are prompted to suggest that these limitations make it desirable that the power to be exercised over aeronautics by the federal government ought, possibly, not to be similarly limited, and that the analogy of admiralty and maritime jurisdiction should not be too closely followed.]

The judicial power of the United States under the Constitution is so limited that cases must arise either from a constitutional right, or from a law of the United States or a treaty, or from a controversy involving land under certain grants.

[This suggests the advisability of carefully considering the appropriate judicial power when formulating any amendment to the Constitution.]

Federal control over the air may be extended in enforcement of treaties relating to air navigation.

[This suggests the reflection that treaties could scarcely be expected so to cover the entire subject matter that complete control of air regulation would be a necessary incident of their enforcement.]

The doctrine of private ownership of the space above the earth and the mass under the earth gives to the private owner of land an unlimited ceiling for his domain ^ and the conversion of any of that space for air travel can only be effected by the exercise of eminent domain ^ with adequate compensation.

[There is no more serious embarrassment to the development of air navigation than the acceptance of this doctrine as thus stated. We are not satisfied that it correctly states the actual condition of the law. We have already called attention to the modifying principle, which, in early times, the English courts seem to have found no difficulty in applying to the law of the right of travel by highway. We shall later mention Professor Bogert's observations upon the limited extent to which the commonly accepted maxim has been applied by the courts in litigation. We feel that this crucial proposition deserves the most careful consideration, and that the right of private property in the air so as to effect exclusive ownership, to the extent of making the flier a trespasser in flight, and to require the exercise of eminent domain to establish air routes should not be so readily conceded. It seems to us that it should rather be incumbent upon the private owner to demonstrate the extent of private ownership, and that, since the convenient maxim which we have already quoted h ^ as never been applied to mere flight at ^reat heights, it should be viewed as an unprecedented question involving rights which have never been asserted or enjoyed as an incident of such ownership; and there is no substantial reason for utilizing the maxim to extend private rights, never heretofore actually enjoyed, to the exclusion of the common right. We submit that it should be the law that it is not an invasion of private right to utilize the air over land for passage by flight, if such flight is accomplished without jeopardizing any right heretofore usually beneficially enjoyed in the ownership of land; and that the rights of ownership are those benefits which have hitherto been commonly recognized as incident to such ownership. Yfe feel that this committee can do no more beneficial service to the public and the common interests of all of our people than to challenge the proposition that it is an invasion of the rights of private ownership of property to utilize air for purposes of flight

Incidentally, we mention that Mr. Spaight in his book, " Aircraft in Peace and the Law" (p. 54), attributes this maxim, which threatens such dread results to the law and art of air navigation, to a note of Accursius a Glossator at Paris in 1519.

yf ^ feel that the essential interests of air flight demand that jurists and lawyers should not be led into any supine concession that our law already vests in private ownership the private right to exclude fliers from the dr. It scarcely behooves us at this time

to prepare a brief upon this proposition, citing the limitations of actual enjoyment hitherto of private ownership as illustrated by various interferences with rights in the air. But we not only direct attention to the ancient principle in the law of roads which we have mentioned above as a limitation of the owners' right, but also to the limitation of the ownership below the surface implied in the ancient doctrine of the ownership of minerals under the surface (27 Cyc. 541), as well as in the modern doctrine of the ownership of a vein under another man's land through ownership of its apex (Costigan on Mining Law, p. 138) and the public easement of the use of navigable stream though the landowner owns the soil beneath them.

In this connection we also call attention to the fact that the Statute of Winchester, A. D. 1285 (Stubbs's Select Charters, p. 469), required the abatement of dykes, trees and bushes within two hundred feet on each side of highways leading from one market town to another, and prescribed that the lord who would not so abate should be answerable for the felony of robbery if it should be done by persons lurking behind the same; and if murder should be caused by them the lord should make a fine at the King's pleasure, thus imposing a duty upon the owner of the adjacent soil in support of the safety of the highway. The recent rent legislation in New York (whose constitutionality has been sustained), in the exercise of the police power in the regulation of excessive rents may also afford an analogy under which the right of the private owner may be subordinated to the public interest. Other illustrations might also be suggested, but we do not multiply them.]

The modern development of the power of Congress to regulate commerce has been brought into question as encroaching upon the powers of the state and individual rights.

[We have become familiar with extension of the regulations by Congressional authority into fields commonly governed by state law, under the application of the principle of non-interference with interstate commerce by casting an undue burden upon it through forcing it to contribute to the cost of intra-state traffic by means of the state regulation of rates. The controversial possibilities of this contention have received recent illustration, especially in the pending controversy over the conflict between the orders of the Interstate Commerce Commission permitting a three-cent per mile fare in interstate traffic and the law of New York requiring a two-cent rate, applied to intrastate traffic between New York City and Buffalo.

The extent to which the regulation of intrastate air traffic might be effected by national authority under the guise of protecting interstate flight is matter for argument, but the controversies which it would certainly provoke bode no good to the development of the art. They but point the more forcefully the desirability of avoiding such conflict through extending the national authority by constitutional amendment.]

The brief which we are considering points out the similarity of air navigation to river navigation and says :

The private ownership of the bed of the stream will be similar to the private ownership of the space above the land. The easement to the

public for navigation and commerce on rivers is very much like the easement that must be eventually granted to the government for the navigation of the air. It will be the use of private property for public travel.

[We do not think that it should be so readily conceded that such an easement must lie in grant, or that the use for public travel is necessarily an invasion of private right. (The laws of Edward the Confessor confirmed by William the Conqueror under the title *De Pace Regis* in taking the waters of rivers under the protection of "The King's Peace" provided for the destruction of obstructions in such waters — Lombard, *Archainomia sive de prisci Anglorum legibus libri*, 1568.) We cannot too often urge that the extent of private ownership in the air space so as to embarrass public travel through the air is itself a new question in jurisprudence not to be passed over by concession or properly solved by indifferently yielding to claims of private ownership which are not a necessary consequence of principles already recognized in the law of private property.]

The publication which we have been discussing contains a valuable bibliography of legal aeronautics, though it does not discuss the views of the writers. With slight exceptions it confines its discussions to Constitution, statutes, and judicial decisions in the United States.

[We submit that in this new branch of jurisprudence those affected by the subject matter should not be contented to follow in the groove of judicial precedent without that broadness of vision which comes from the study of the fundamental concepts of right as expressed by philosophical writers and thinkers, both of our own and of other nations.

The specific questions of individual right and of particular circumstances which these publications suggest are too numerous for discussion in a report of this character, but illustrations of their scope are afforded by some of the titles, for instance: "Births, deaths and marriages in aircraft during flight"; "Ex-territoriality in aerial locomotion"; "Force Majeure and its effects on civil obligations connected with aeronautics"; "Ownership of the ground and freedom of the atmosphere"; "La loi des contrées désertées et des pointes inaccessibles"; "L'aviation sur les eaux territoriales"; "Avions sanitaires et conventions de la croix-rouge"; "L'air: un nouveau domaine juridique"; "La responsabilità penale dei reati commessi nello spazio aereo e la giurisdizione internazionale"; "L'assurance sur la vie et l'aviation"; "Liability for accidents in aerial navigation"; "Air Sovereignty"; "Mortgages and liens upon aircraft"; "The right of property in the air"; "Domicile in connection with aircraft damage"; "Applicability of rules of maritime law to the air space"; "Delicts and quasi-delicts in the air"; "Guarantees of capacity of aviators"; "Guarantees of capacity of constructors"; "Ownership of the ground and the freedom of the atmosphere"; "the right of circulation and of landing"; "Paper on insurance"; "Licenses and industrial property"; "Policing of Aerodromes and aerial meetings"; "Rendering of assistance to aircraft."

The enumeration of these selected titles, which are only a few in the bibliography of the subject will serve to illustrate to the

average lawyer or judge who has given no consideration to the matter, what a tremendous field of jurisprudence is opened by these air problems ^ and how imperative it is that they should be solved with a breadth of vision which will not suffer the development of the art to be hampered within the petty meshes of a misconceived slavery to the analogies of judicial precedents, which were devised without any concept of their application in this new sphere.

Altogether this Air Service Information Circular upon legal questions affecting federal control of the air is doubtless the most exhaustive contribution to the subject from the standpoint of federal law, though it appears to concede without challenge, discussion, or doubt, the principle of absolute and exclusive private property in the atmospheric space ; a proposition which in our opinion should not be supinely yielded, but in the common interest should be challenged, discussed, debated, and yielded only to the extent that the private owner may demonstrate according to the accepted and tested principles of jurisprudence that the claim is an essential part of his right of private property. We deem this unchallenged concession to be the most dangerous element which can threaten the most useful development of air navigation, and advise that it should be combated upon every reasonable ground of jurisprudence, history, legal principle and common right, without, however, impairing the right of private property as it has developed in actual recognized beneficial enjoyment.]

The other of the two recent reviews of the law of aeronautics which we have mentioned is that of Professor Bogert, a member of this committee, upon "Problems in Aviation Law."\*\* He points out that except for legislation in two states it cannot be said with positiveness whether an aviator is a trespasser against the owner of the underlying land, under what circumstances an aviator is liable for damage from a falling machine, or where the constitutional authority of regulation lies. He says : " Nor is there any general law, except the law of self-preservation, which forbids an inexperienced and incompetent pilot from flying anywhere in a defective machine/^ He notes that ^' the more important European countries have adopted air codes, but America lags behind. ^ ^ He also expresses his opinion that the expedient of local ordinances, forced by the inactivity of states and nation, is undesirable and is productive of much confusion, and practically impossible of enforcement. In respect to the necessary statute law, he says :

" If these statutes are to be harmonious, complete, scientific and well-drafted, the several legislatures and the bar generally must be informed of the experience of other countries, must have clearly in mind the fundamental legal problems involved in aerial navigation, and must study carefully the constitutional limitations of the state and federal legislatures."

He states that the development of peace time international air law was long retarded by a conflict of views among jurists upon the fundamental question of the relation of a state to the space over its territory, but the view which has definitely prevailed is that of territorial sovereignty over the air. The guiding



principles of an International Air Navigation Convention were established by the commission to study air questions, instituted in March, 1919, by a decision of the Supreme Council of the Paris Peace Conference. Upon this commission the United States had two representatives. These principles included the recognition of sovereignty over the air above territories and territorial waters, with freedom of international navigation, so far as consistent with security of the state, without discrimination on the ground of nationality; the nationality and registration of aircraft; regulations for safety, including certificates of airworthiness, licenses for personnel, international recognition, rules of the air for signals, lights and the prevention of collision, rules for landing and ground rules. The convention, with reservations, was signed in behalf of the United States on May 31, 1920, but has not been ratified by the Senate, hence it is still not binding on the United States. The convention provides for an International Commission for Air Navigation and contains specific provisions concerning marking aircraft, certificates of airworthiness, log books, rules as to lights, signals and methods of flight, qualifications of pilots, aeronautic maps and ground marking, the collection and dissemination of meteorological information, and customs. The convention links the commission with the League of Nations. Such treaties of peace as have been effected in European nations have contained clauses relating to the international law of aviation, which is thus on the point of assuming definite form. The Convention contains no provision granting extraterritorial jurisdiction, but allows the rights and duties of aviators to be controlled by the law of the state over which they are flying and leaves each such state to determine for itself the question of liability for injuries to person or property by aircraft; it concerns flying by foreign and not by domestic craft. Professor Bogert points out the effect of Article 5 of the Convention is prohibiting flight within a state of craft not possessing the nationality of a contracting state, except by a special and temporary authorization. (It is, we understand, by reason of this clause, that difficulty has recently arisen respecting flight by American aviators in Canada. No more forcible illustration than this is required of the difference between air navigation and navigation of the high seas. Not only does the Convention recognize sovereignty of the air, but it thus provides for the necessary exclusion from flight, save by special and temporary authorization, of all aircraft not possessing the nationality of a contracting state.) Mr. Bogert shows that the British Air Navigation Act of 1920 ratifies the International Air Navigation Convention of 1919 and provides in detail various measures for carrying it into effect. It denies any right of action for trespass or nuisance on account of reasonable flight, but allows recovery from the owner for actual damage, without proof of negligence or intent or other cause of action, except in case of contributory negligence; the owner to have a right of action over against another wrongdoer causing the damage, with the right to cause him to be brought into the initial action; the owner to be exonerated and the liability borne instead by anyone hiring the craft for over fourteen days. The act imposes severe penalties for unnecessarily dangerous flight, and applies the law of wreck and salvage to aircraft over or on the sea or tidal waters; provision is made for giving security for patent infringement. Provisions of other laws are described by Professor Bogert, including the Indian, Canadian, French, German, Dutch, Swiss, Serbian and

Italian laws. He speaks of the early interest in the subject of the Honorable Simeon E. Baldwin, of Connecticut, a former president of this Association, and the resolution introduced by him, which was referred to the Committee on Jurisprudence and Law Reform in 1911, and unfavorably reported by it because it was not a subject of general interest about which there could be no reasonable doubt as to the necessity for legislation. The report of the committee said :

"The navigation of the air has not become so general as to. permit of. uniform legislation so as to fix with legal certainty rules for its government."

The committee, however, expressed the forward-looking opinion that the aviator should not be held to any greater liability than the modern common carrier, and added :

" Unlen liability springs out of some contract, or arises out of some tort, the carrier should not be mulcted in damages, whether the carrier be by land, sea, or air."

Gfovernor Baldwin then turned to the legislature of his own state, Connecticut, and on his recommendation the Connecticut Act of 1911 was passed, the first measure regulating aviation adopted in America. This act provided for registration, licensing and marking, and adopted the rule of absolute responsibility for damage by an aeronaut and his eniployer. Professor Bogert states the leading characteristics of the subsequent acts of Massachusetts in 1913 and 1919, Hawaii 1917, California 1919, Michigan 1919, New York 1919, Texas 1919, Washington 1919, Wisconsin 1919. These laws are diverse and fragmentary. It is curious to note thait in the absence of comprehensive law the unofficial regulation of aviation has for some years past been a function exercised by the Aero Club of America, a membership corporation of New York. Professor Bogert shows that hydro-aeroplanes have been classed as vessels by the Department of Commerce and so subjected to the federal water navigation laws. (Opinionâ€ Solicitor, Department of ConMuerce, February 17, 1914; Order, Assistant Secretary of Treasury Peters, Pebnl-ary 21, 1916.) We are advised that a libel has been filed in the Southern District of New York against a hydroaeroplane and process issued thereon. Tlie National Advisory Committee for Aeronautics (instituted under the Naval Appropriation Act of 1915; Act of Congress March 3, 1915; Public No. 273) has expressed the view that state legislation should follow and be in accordance with national legislation, and that consequently the states should withhold independent action. This, oi course, is essentially wise, if any uniformity is to be expected in the absence of a federal constitutional amendment. Professor Bogert analyzes the bills pending before Congress, and states their distinctive features ; that introduced by Senator Sherman recognizee the ownership of the air space by the private landowner, and would authorize him to forbid flight under penalty of damages with the right to an injunction ; it is characteristic of many, if not all of these bills, that they assume the power of Congress over flight. One or two of the bills specifically declare the navigable air and navigation of the air to be within the admiralty jurisdiction of the federal courts. We submit that Congress can-

not create a power by declaring it to exist, and behind any declaration of Congress lie the limitations of the Constitution.

Mr. Bogert observes : It will thus be readily seen that there is no uniformity in state legislation in the United States and that such federal bills as have been presented proceed upon radically different theories as to the basis for federal legislation and the extent to which it may go.

We would add that the time has certainly come when it can no longer be said, in the language of the Committee of Jurisprudence and Law Reform in 1911, that this is not a subject of general interest, or about which there can be any doubt as to the necessity for legislation. The present uncertainty and confusion can lead to but one result, the discouragement and retardation of the development of the great possibilities in commercial air flight.

Professor Bogert's article treats in detail of the following as principal problems : Sovereignty over air space ; private property in air space ; basis of the aviator's liability for damage ; regulations to protect the public; and whether legislation shall be state or federal or both. Upon the question of private property over air space, he shows that in practical adjudication in the courts the application of the accepted maxim of the extent of ownership to the space not immediately adjacent to the soil and the structures thereon is wanting. In treating the question of state or federal legislation he considers and rejects admiralty jurisdiction as including aviation law, truthfully saying :

Nor can Congress by calling aviation law "admiralty" make it so. If the federal legislature could by torturing the words of the federal constitution into wholly unnatural meanings fix the bounds of federal control, there would be no limit to the powers of our national government.

He considers the contention that the war power confers on the federal government exclusive authority over civil aviation, a theory entertained by some members of Congress, but adds :

The same argument would apply equally well to other industries necessary to the support of an army, as, for example, the business of manufacturing and growing food. There would be no limit to the war power if it were construed to have this effect.

In considering whether the power to make treaties grants exclusive authority to the federal government to control aviation (another constitutional power which some advocates assert could be made the basis of exclusive federal control), he points out that you must first have your treaty, and then, so far as existing conventions go, they concern themselves with foreign aviators and international aviation and are not exhaustive. He says :

But the conditions upon which interstate and intrastate flight are to be allowed may well be entirely different from those governing international aviation, so long as certain discriminations against foreign aviators are avoided.

In considering the interstate commerce clause as authority for federal control, he expresses the view that thereunder a federal act regulating international and interstate aviation only would undoubtedly be constitutional.

## Notes on "Civil Aviation"

He points to the obvious advantages of a uniform state aviation law. He concludes that the regulation of interstate and international aviation by the federal government and the control of intrastate aerial navigation by the states (preferably through a uniform act) are the only constitutional methods of action at present. He says :

The uniform state bill might well include .... a statement of the landowner's property in the space above his land, subject to an easement of passage ....

He indicates that the power to regulate intrastate flight as an incident of interstate flight is a principle which should be sparingly applied, adding :

Liberally construed, such a doctrine means the destruction of all state rights.

He concludes :

Perhaps an all-powerful national air board and an all-inclusive national air code would be a desideratum if we were starting de novo, but under our peculiar dual form of government, with a national government of delegated powers, it is difficult to see how such results can be accomplished without ignoring the federal constitution.

In the conclusions of Professor Bogert as above recited the other members of this committee concur, but they serve to show, in our opinion, the desirability of an adequate amendment to the federal constitution conferring more delegated power, rather than either to confuse the subject and embarrass the art by legislation of the character which he deems constitutional, or to stretch the constitutional powers to grasp excessive authority in disregard of the essential limitations in the explicit terms of the Constitution itself.

President Harding's Message on Aeronautics and Its Accompanying Bill.

The subject of aeronautics was called to the attention of Congress in a special message of President Harding on April 19, 1921, transmitting a special report of the National Advisory Committee for Aeronautics prepared at his request and dealing with federal regulation of air navigation, air routes to cover the whole United States, and cooperation among the various departments of the government concerned with aviation. He approved the committee's statement of general considerations on a national aviation policy, and its recommendations for legislative action. This report seems to conceive no power in the state governments. It states :

" It is a pressing duty of the federal government to regulate air navigation; otherwise independent and conflicting legislation by the various states will be enacted and hamper the development of aviation."

While we are in entire accord with the view that independent and conflicting state legislation will hamper the development of

aviation, we see in this no constitutional excuse for assuming unconstitutional powers or for making unconstitutional use of existing powers. In our judgment it points to the necessity of constitutional amendment.

In harmony with its tenet, the report recommends the adoption of a bill which it appends, whose title appears to be indicative of no doubt in the minds of its sponsors of the plenary power of the federal government. It is entitled, " A bill to regulate air navigation within the United States and its dependencies, and between the United States and any of its dependencies and any foreign country or its dependencies."\* We have italicized the word " within" to indicate the unlimited scope of the bill. The bill proposes the formulation of rules and regulations by the commissioner of air navigation, for whom it provides, and their approval by the Secretary of Commerce, and makes them binding and enforceable from the date of promulgation. It apparently contemplates the most complete and exclusive control within the United States of the entire subject of air navigation, including aircraft, personnel, management ^ airdromes, landing fields, aerial routes. It prohibits the use or operation of aircraft within the United States without a license from the commissioner of air navigation (subject to certain exemption by treaty or convention) ; it restricts the ownership of aircraft, provides for annual licenses, and gives inquisitorial powers to the commissioner. It prohibits the operation of airdromes except under similar license and similarly restricts the ownership of airdromes. It authorizes the commissioner to fix the license fees subject to the approval of the Secretary of Commerce (thus, we assume, avoiding the contention that this can be justified as tax legislation) ; it imposes severe penalties for violation and confers jurisdiction upon the federal courts. It declares such portions of the air as are navigable by aircraft and all aircraft navigating the air to be within the admiralty jurisdiction of the federal courts (thus apparently claiming by Congressional action the power to establish a jurisdiction not conferred by the Constitution, by declaring the subject matter to be within a jurisdiction which was constitutionally conferred). It confers jurisdiction upon the district courts, of all cases involving air navigation and aircraft ; it saves to suitors a common law remedy where the common law is competent to give it (not, however, otherwise indicating where or in what courts the common law remedy is to be enforced). It extends the maritime law and laws relating to watercraft and water navigation to aircraft and air navigation so far as applicable (thus creating a fruitful field for controversial litigation and a degree of legal uncertainty until after an event), and except (among other exceptions ) as modified by the rules and regulations (thus apparently conferring or attempting to confer upon an administrative officer the power to modify a law) . It contemplates its own partial invalidity by saving the parts not held to be invalid.

It recognizes the continued existence of the states by authorizing the Commissioner of Air Navigation to cooperate with the various states, cities and municipalities for the purpose of setting aside and establishing airdromes and landing fields to be used in common by federal, state, municipal, commercial, and private aircraft, but under the rules and regulations to be pro-

mulgated by the commissioner.

While the members of this committee share the common view that the best interests of aeronautics demand that the power of the federal government shall be extended (but by constitutional amendment) to this subject matter, they do not regard the existence of the subject matter as sufficient excuse for ignoring either the Constitution or the states; nor do they consider that a new subject matter is within a constitutional category because it suits somebody to put it there. The bill itself tacitly acknowledges that the subject matter is not within the admiralty jurisdiction conferred by the Constitution when it naively provides that the maritime law shall be held to govern so far as applicable and except as modified (among other methods) by the rules and regulations promulgated by the Secretary of Commerce.

The Constitution says: "The judicial power shall extend .... to all cases of admiralty and maritime jurisdiction ^" (Art. III, s. 2). The bill declares that navigable air and aircraft navigating the air are within the admiralty jurisdiction of the federal courts, but that maritime law shall be held to govern aircraft and air navigation only in so far as applicable thereto and as not modified (among other things) by the Secretary of Commerce. This provokes the inquiry whether it does not attempt to impair the constitutional judicial power by grasping the subject matter as vnthin the category, and then m ^ ing the law of the category in part inapplicable.

It does not seem to us that these problems of fundamental constitutional importance should be viewed with indifference either by the members of the American Bar Association or the public. The interests of aeronautics demand adequate legislation, but they do not demand the ignoring of constitutional limitations, nor the impairment, except by proper constitutional amendment, of the powers of the states.

We have thus analyzed this bill (which also prospectively contemplates that it may be utilized to enforce a treaty or convention, not yet entered into) because it is advocated by the National Advisory Committee for Aeronautics, and is approved by the President in a special message of transmission to Congress. Other bills are pending, but this one is selected for this analysis and cominent because it forcibly illustrates the constitutional problems involved, and has the distinction mentioned. It seems to us that it cannot without inevitable litigation be deemed of sufficient constitutional validity to promote substantially the art which it is designed to foster, by removing the uncertainties of law which cause capital and insurance to hesitate. It cannot be a very substantial advance to remove a controverted subject from the domain of silent uncertainty to the domain of constitutional uncertainty, with the general proviso that all valid parts of a law shall stand, though its invalid parts disappear, that maritime laws shall govern where applicable except as modified by tlle Secretary of Commerce, and that common law remedies shall be saved where the common law is competent to give a remedy. The rules and regulations may tend to safety of navigation when observed, but the law itself suggests uncertainty of the most fundamental character.

## Notes on "Civil Aviation"

It is scarcely to be hoped that states which have already enacted laws and offenders and litigants will acquiesce in the view that the interests of the art demand that constitutional objections shall be smothered, or that the unconstitutional features of the bill will not be emphasized in litigation, though we are not unmindful that when, in the throes of the revolutionary war, the Continental Congress chartered the National Bank of North America as a financial aid, and its power was assailed, the legislature of New York generously also chartered the same organization and gave it for a time the monopoly of the banking privilege in New York (N. Y. Laws 1782, c. 35) ; nor that when Congress enacted the Interstate Commerce Act the state of Virginia substantially reenacted its appropriate provisions as applicable to intrastate traffic (Laws of Va. 1902-3-4, p. 968, c. 3; Commonwealth vs. Norfolk & W. R. R. Co., 111 Va. 59, 68 S. E. B. 351).

These examples afford a suggestion that the unconstitutional shreds of the approved bill, if enacted and if an unconstitutional grasp of power and invasion of state rights, might be supplemented by state legislation making its main purpose of properly regulating aeronautics by law, effectual.

The administrative questions, whose conflicting aspects are illustrated by the bills and resolutions now before Congress, are matters chiefly of internal governmental organization upon which we do not comment, though it is contended by the advocates of different views that they respectively are of vital importance. The accepted terminology of the subject is, we think, a matter which we should bring to the attention of the Executive Committee, since we are admonished that even the name of our committee is in the light of this terminology unnecessarily and even unwisely restricted. We are styled the Committee on the

Law of Aviation, whereas a more comprehensive title would indicate a wider duty. The law is the law of aeronautics, aviation forming but a limited branch, though we assume that the incident of aerography is implicitly embraced within the term aeronautics.

The terminology of which we are advised is as follows :

Aeronautics, "General term covering whole Science and art of aerial locomotion.

I. Aerostation "lighter than air.

1. Aerostat "balloon.

(A) Free:

(a) Passenger.

(b) Pilot, or soimding.

(c) Propaganda.

(B) Captive:

(a) Spherical, or ovoid.

## Notes on "Civil Aviation"

(b) itite, "sausage," "drachen," "saucisc," or other

tfpe observation balloon.

2. Aeronat-\*a dirigible balloon; an airship.

(A) Rigid.

(B) Semirigid.

(C) Nonrigid.

II. Aviationâ€" gasless, heavier than air. All these kinds of apparati are known as aeronefs:

1. Airplanes, either tractor or pusher, land or water.

(A) Monoplane.

(B) Biplane.

(C) Triplane.

(D) Quadroplane, etc.

2. Omithopter â€" a beating-wing machine. None of this t3 ^ e has to date been successful at flight.

3. Helicopterâ€" a direct-lift machine. Only successful experimen- tally as yet.

4. Kites.

5. Gliders.

The Committeeb's Collection op Pbbtinknt MateriajL

The committee has collected much printed matter which it will transmit when and if directed by tiie Executive Committee with a copy of this report for deposit with the custodian of the Association's books (By-Law V).

The committee deems the preservation of this material by the Association as a part of the historical literature of the subject desirable. This material includes newspaper clippings of current interest.

Because of its especial interest to Americans, we invite attention to the form of the Air Board Act of Canada â€" 9-10 Geo V, Ch. II â€" June 6, 1919, the Air Regulations, 1920, issued there- under and in effect January 17, 1920, together wiili the explana- tory description of the Air Administration, approved by the Chairman of the Air Board and published in Canadian news- papers in December, 1919.

The Hydrographic OfIBce of the United States under the



authority of the Secretary of the Navy has begun a monthly publication entitled " Notice to Aviators,\*\* the first number appearing under date November 1, 1920. In the April, 1921, number, it is announced that certain designated customs air ports have been established in Canada for planes from the United States, and that the Canadian Air Regulations have been modified to prohibit " stunts " in civil flying (except when a pilot is alone), in order to prevent accidents and to induce a realization that civil flying does not involve or require the taking of risks.

Since January 1, 1920, the Federation Aéro Nautique Internationale (founded in 1905) has published a quarterly bulletin of interest to aviators.

In *Boyd vs. United States*, 116 U. S. 635, the Supreme Court of the United States announced it to be the duty of the courts to avoid encroachments on the Constitution.

In *Scranton vs. Wheeler*, 179 U. S. 141, it was said that the right to improve navigation is paramount to the riparian owner's right of access to the stream.

On June 21, 1920, Venezuela put into effect Laws of Aviation (April, 1921, Journal issued by the American Bar Association, p. 194).

Congress has already legislated for the establishment of an Air Service in the Army (Act June 4, 1920, C. 227) and (Act June 5, 1920, C. 240) respecting the division of the control of aerial operations from land bases, and those attached to a fleet, including shore stations, between the Army and Navy, and concerning claims for damages not exceeding \$250 (committed we assume by aircraft belonging to the national government) and (Act July 11, 1919, C. 8, 51) concerning instruction of enlisted or appointed flying cadets in flying schools, under the authority of the Secretary of War. Its earlier legislation on the subject included provision (Barnes Federal Code, Sec. 10147, Act March 3, 1915, C. 83) for the establishment of an advisory committee for Aeronautics, an Aircraft Board (Barnes Federal Code, sec. 10148, Act Oct. 1, 1917, C. 61, ss. 1-6) ; provision for aircraft production corporations, under the authorization of the Director of Aircraft Production, to be dissolved, however, in proceedings

to be begun within one year from the signing of the treaty of peace with the Imperial German Government (Barnes Federal Code, sec. 10149, Act July 19, 1918, C. 143, XVI, ss. 1-5) ; provision by appropriation for the acquisition of patent rights necessary to the manufacture and development of aircraft in the United States and its dependencies for governmental and civil purposes under regulations prescribed by the Secretary of War and the Secretary of the Navy (Barnes Federal Code, sec. 10150, Act March 4, 1917, C. 180) ; to authorize the President to establish an executive agency to exercise jurisdiction and control over the production of aeroplanes, aeroplane engines and aircraft equipment; the act to remain in force for six months after the proclamation of peace or earlier designation by the President (Act May 20, 1918, C. 78) ; for an experimental aeroplane mail service (Barnes Federal Code, sec. 6814, Act March 3, 1917, C.

## Notes on "Civil Aviation"

162; July 2, 1918, C. 117) ; to authorize the President to sell war materials used in the construction of airplanes (Barnes Federal Code, sec. 1647) ; penalizing espionage by means of aircraft (Barnes Federal Code, sec. 9725, Act June 15, 1917, C. 30, title I, S. 1) ; to authorize the Secretary of the Navy to adjust claims for damage from naval aircraft operation (Act July 1, 1918, C. 114, S. 1). In at least one Congressional act aircraft were included in the word "ship" (Barnes Federal Code, sec 10153). Congress has also legislated respecting army aviation (Barnes Federal Code, Sees. 1531, 1637, 1587) including the organization of an aviation section in the Signal Corps (ibid., s. 1537), gratuities on deaths in the Navy or Marine Corps resulting from aviation accidents (ibid., S. 2360) ; the acquisition of land for the United States for aviation purposes (ibid., s. 1538), and the devotion of government property or land thereto (Act July 9, 1918, C. 143) ; the establishment of aviation stations for life saving and of an aviation school for members of the coast guard ; the performance of aviation duty by officers and men of the Coast Guard (Barnes Federal Code, ss. 7820, 7821) ; the organization of a Naval Reserve Flying Corps (ibid., S. 2458) ; the pay of naval aviators (ibid., S. 2313). Our recommendations are stated at the beginning of this report.

Charles A. Boston, New York,  
William P. Bynum, North Carolina,  
George G. Bogert, New York.

While I agree with the general conclusions reached in the foregoing report as to the proper and best methods of procedure, I have not yet reached any positive conclusion as to the authority and power of the federal government to enact aviation laws under the present provisions of our Constitution; but in view of the present wording of the Constitution as construed by the Courts, I strongly concur in the conclusion reached in the report, that in order to remove all doubt on the question it would be wise to have a Constitutional Amendment to the Federal Constitution that would fully cover the subject and leave no doubt as to the authority of the Government in this regard.

Orbin N. Caetbr, Illinois.

I concur in Judge Carter's views.

William P. MacCrackbn, Jr., Illinois

In July, 1920, the US National Aircraft Underwriters Association was formed with headquarters in New York, and we have been in communication with their representatives.

July 1920 : CIVIL SERVICE COMMISSION OF CANADA - POSITIONS VACANT List No. 48

The Civil Service Commission of Canada hereby give public notice that applications will be received from persons qualified to All the following positions in the Civil Service of Canada :-

### **AIR CERTIFICATE EXAMINER**

Reference # 1291

Two Air Certificate Examiner for the Air Board at an Initial salary of \$2,940 per annum,

## Notes on "Civil Aviation"

which will be increased upon recommendation for efficient service at the rate of \$180 per annum, until a maximum of \$3,300 has been reached .

This initial salary will be supplemented by whatever bonus is provided by law.

If board, lodging or ordinary clothing is supplied, the value thereof shall be deducted from time above compensation .

### Duties:-

Under the direction of the Controller of Civil Aviation, **Air Board**, :

1. to examine, approve, and recommend the issue of licenses to **Air** pilots, navigators, and **Engineers** ;
2. to examine, approve, and recommend the issue of certificates of airworthiness of flying machines ;
3. to examine, approve and recommend the issue of licenses to aerodromes ;
4. to assist in the selection of, and make recommendations in connection with air routes ;
5. to conduct examinations in the theory and practice of air pilotage and air navigation ; and
6. to perform other related work as required .

### Qualifications:-

1. Education equivalent to graduation from a university of recognised standing ;
2. 2 years of experience in flying various types of flying machines-
3. commercial air pilot's and air navigator's certificates ;
4. extensive knowledge of:
  - A. theory of flight
  - B. piloting iwd
  - C. design of flying machines,
  - D. construction
  - E. rigging, and
  - F. overhauling of all types of flying machines, and of the
  - G. construction and maintenance of aerodromes ;
  - H. ability to conduct examinations in the theory and practice of air pilotage and air navigation and
  - I. ability to make thorough inspections and investigations into the proper construction and rigging of aeroplanes and engines ;
  - J. and ability to supervise such work .

Examination : Subjects and weights as follows :

1. Education, 4
2. Training, 4
3. Experience, 4 ;
4. Oral Interview, if necessary in the opinion of the Commission, 1 .

AUGUST 6 1921 : CIVIL SERVICE COMMISSION OF CANADA (Gazette pg 543 1921)

CIVIL SERVICE OF CANADA - POSITIONS VACANT List No. 109

The Civil Service Commission of Canada hereby give public notice that applications will be received from persons qualified to All the following positions in the Civil Service of Canada :-

### **Air Certificate Examiner, Western Provinces**

Reference # 2806 .

An Air Certificate Examiner, Commercial Aviation Branch, Air Board, Western Provinces,

Initial salary of \$2,940 per annum,

which will be increased upon recommendation for efficient service at the rate of \$180 per annum, until a maximum of 18,800 has been reached .

This initial salary will be supplemented by whatever bonus is provided by law.

If board, lodging or ordinary clothing is supplied, the value thereof shall be deducted from time above compensation .

### Duties:-

Under the direction of the Controller of Civil Aviation, **Air Board**, :

1. to examine, approve, and recommend the issue of licenses to **Air** pilots, navigators, and **Engineers** ;
2. to examine, approve, and recommend the issue of certificates of airworthiness of flying machines ;
3. to examine, approve and recommend the issue of licenses to aerodromes ;
4. to assist in the selection of, and make recommendations in connection with air routes ;

## Notes on "Civil Aviation"

5. to conduct examinations in the theory and practice of air pilotage and air navigation ; and
6. to perform other related work as required .

### Qualifications:-

1. Education equivalent to graduation from a university of recognised standing ;
2. 2 years of experience in flying various types of flying machines-
3. commercial air pilot's and air navigator's certificates ;
4. extensive knowledge of:
  - A. theory of flight
  - B. piloting and
  - C. design of flying machines, of the
  - D. construction
  - E. rigging, and
  - F. overhauling of all types of flying machines, and of the
  - G. construction and maintenance of aerodromes ;
  - H. ability to conduct examinations in the theory and practice of air pilotage and air navigation and
  - I. ability to make thorough inspections and investigations into the proper construction and rigging of aeroplanes and engines ; and ability to supervise such work .

While a definite age limit has not been fixed for this competition, age may be a determining factor when making a selection . A rating on "Education and Experience" will be given from the sworn statements submitted by applicants on their application forms.

To those who qualify, an oral examination may be given if necessary,

## AIR ENGINEER

- Certificate ? License ? reference ..

While references are found that detail the requirement for "Air Foremen" and other Air Board officials to hold an Air Engineer's license, NO references can be found within the official record of the Government of Canada related to hiring for this position or to the testing for licenses issued..

17 October 1921 : "It is distressing to think of the probable language of a ground engineer faced with the task of giving this engine a "top overhaul." Comment made by the author of Air Age Weekly in the description of the 1,000 H.p Rumpler engine - interesting and ingenious. But it is very doubtful whether 28 cylinders, together with 112 valves,' and with the necessary accessories for operating the said valves, for illuminating the 56 plugs, and for carburetting for 7 inlet manifolds can be justified even for 1,000 h.p source : **AERIAL ACE** WEEKLY, October 17, 1921 131

15 November 1921 : Handley Page Type O/400 en-route from Paris to Croydon suffers a catastrophic engine failure and propeller loss resulting in a forced landing at Lympne, damaging the undercarriage.

## Notes on “Civil Aviation”

21 November 1921 : King George VI authorises, and the Government adopts, the new coat of arms<sup>180</sup> for the Dominion of Canada. Three considerations were kept in view in determining the “achievement of arms,” being the combination of arms, crest, supporters, and motto. These three considerations were:

1. That Canadians stand to their King in as close a relation as do any of his subjects elsewhere;
2. That Canada, an integral part of the British Empire, has emerged from the war a member of the League of Nations;
3. That Canada was founded by the men of four different races—French, English, Scottish and Irish— and as such, Canadians inherit the language, laws, literature and arms of all four mother countries.

Four of the “arms” displayed on the shield date from ancient times, with a “difference” to mark them as Canadian:

1. The 3 Lions on Red, blazonet of the Plantagenet Kings of England,
2. The Red Lion rampant, with blue tongue and claws of King William the Lion of Scotland,
3. The silver stringed golden harp on blue of Edward I Bruce, King of Ireland,
4. The Royal Fleur-de-Lis of Louis IX, King of France,
5. The “Difference” is “a sprig of maple leaves on silver” on the lower third of the shield.

The crest on the top of the shield is a lion holding in its paw a red maple leaf, a symbol of sacrifice.

The supporters of the shield are, with some slight distinctions:

- I. the lion of the Royal Arms, upholding the Union Jack (cross of St. George, cross of St. Andrew and the cross of St. Patrick)
- II. the unicorn of the Royal Arms. Upholding the ancient banner of France, encircled by golden chain.

The motto beneath the shield is new—“*A mari usque ad mare*”—“From sea to sea”, being extract from the authorized Latin version of verse 8 of the 72<sup>nd</sup> Psalm: “*Et dominabitur a mari usque ad mare, et a flumine usque ad terminos orbis terrarum.*” “He shall have dominion also from sea to sea, and from the river unto the ends of the earth.” Canadian tradition is that the Fathers of Confederation derived the designation “Dominion” from this verse.

This crest printed in black on the cover of the publications of the government of the Dominion of Canada, including the cover of the Air Regulations and the top of the Air Engineer Application form.



<sup>180</sup> The Arms of Canada [http://www65.statcan.gc.ca/acyb07/acyb07\\_2018-eng.htm](http://www65.statcan.gc.ca/acyb07/acyb07_2018-eng.htm)

## Notes on "Civil Aviation"

Britain's air ministry decided in 1921 to reinstitute the training of NCO pilots.

Candidates were drawn from the ranks of mechanics and skilled tradesmen. They were to possess "pluck, reliability, alertness, keenness and energy".

Initially, it was expected that, having served five years as pilots, they would revert to their original ground trades, but this wasteful attitude to experience and acquired skills was soon abandoned.

In Canada, the Royal Canadian Air Force authorized NCO pilot training in November 1926; NCO pilot candidates had to have attained at least leading aircraftman (LAC) rank and be not more than 25 years old.

Canada's NCO pilot training program was suspended as an economy measure in the Great Cut of 1931.

All Canadian pilots (officers and NCOs) spent much time flying on Civil Government Air Operations, namely forestry patrols, anti-smuggling operations and aerial photography. The pattern followed was that commanding officers at bases across Canada annually nominated one or two promising tradesmen for pilot training.

Those chosen were usually the men with considerable earlier experience.

George V. Miscampbell, a former taxi driver, had been in the RCAF more than five years as a vehicle and aero engine mechanic when he was chosen from Station Winnipeg's Other Ranks in the autumn of 1928.

Asa J. Horner had almost four years service as a mechanic, mostly at Ottawa Air Station, before being singled out for pilot training. James E. Doan had been 30 months a labourer and aero engine mechanic when selected at Camp Borden.

Doan's classmate, Arthur Fleming, also had 30 months of RCAF service as an aero engine mechanic at Winnipeg.

Joseph Mirabelli was eight years an aero engine mechanic before being chosen for pilot training.

An exception to the "long experience" practice was Robert I. Thomas, a rigger at Vancouver with only 18 months' RCAF service when he was recommended in the fall of 1928.

The career of one NCO pilot demonstrates how careers were shaped.

G.V. Miscampbell, having been selected as a pilot candidate, went to Camp Borden which was then the RCAF's sole initial air training centre. His course lasted from October 1928 to February 1929. During this time he flew 18 hours, 15 minutes with his instructor and 56 hours solo, all on Avro 504N aircraft. The course included a climb to 10,000 feet, then landing within 50 yards of a designated point. He also had to execute three landings with the engine stopped, completing the landing roll within 150 yards.

Miscampbell also made cross-country flights between Camp Borden and Toronto.

His ground courses included navigation, map reading, parachute packing and signalling with lamp, semaphore and radio. Significantly, he received no instruction in armament or army co-operation tactics—subjects featured in a PPO's curriculum. Winter months were spent on courses, including refresher flying, photography and engine maintenance.

## Notes on "Civil Aviation"

Sgt. R.W. Pike was killed in May 1930 while delivering a Reid Rambler to Ottawa. Aircraft components had not been properly secured by a contractor and Pike lost elevator control before crashing.

Flt. Sgt. A. Anderson, a member of the first NCO pilot course, was killed in the crash of a De Havilland Puss Moth at Ottawa in March 1932. He had been on a test flight when his left mainplane disintegrated and the machine spun into the ground.

*Six NCO pilots gave up flying to return permanently to technical work.*

Four more (Bowker, Hunter, Small, Winney) left the RCAF for civilian jobs.

Hunter became an executive with Trans-Canada Airlines. Small and Winney rejoined the RCAF in 1939.

34 surviving RCAF NCO pilots were commissioned in November 1939 and four more were commissioned within a year.

**Those who had reverted to technical duties had to wait longer to be granted officer status** - See more at: <https://legionmagazine.com/en/2005/09/the-nco-pilots/#sthash.kpQ7EauU.dpuf>

November 1921 : Canadian Air Board - Air Engineer licenses to date<sup>181</sup>

- A. No. in force : 34
- B. No. suspended: 1
- C. No. cancelled: 1
- D. No. applications received: 72
- E. No. in abeyance: 2
- F. No. temporary issued : 70
- G. No. permanent issued : 35

06 December 1921 : RAeS Associate Fellowship Examinations : At a meeting of the Candidates' Committee, a letter from the Honorary Secretary of the Students' Section was discussed and the following recommendations to Council were made<sup>182</sup>.

1. That it be agreed that Students admitted for the regular engineering course in a college of university standard shall generally be regarded as exempt from Part I. of the examination for Associate Fellowship.

2. It is not to be understood from the note to the Rule given on page 2 of the Rules for Election to Fellowship and Associate Fellowship that attendance throughout an approved course of Aeronautics will necessarily be counted as equivalent to one year's experience of the science of aeronautics.

The flying **or technical service** during the war of any applicant for Associate Fellowship **must be considered** by the Candidates' Committee on its individual merits. This does not make any specific distinction between flying service during the war and at any other period.

3. It is recommended that the Diploma of East London College in Aeronautics and Aeroplane Design be accepted as exempting from the paper in Aerodynamics under the Rules of the examination for Associate Fellowship of the Society.

The recommendations were subsequently considered by the Council and adopted in toto.

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<sup>181</sup> [https://archive.org/details/Flight\\_International\\_Magazine\\_1921-01-27-pdf?q=Air+Engineers%27](https://archive.org/details/Flight_International_Magazine_1921-01-27-pdf?q=Air+Engineers%27)

<sup>182</sup> RAeS - THE AERONAUTICAL JOURNAL - THE REQUIREMENTS AND DIFFICULTIES OF AIR TRANSPORT : January 1922 pg 2

**CANADIAN AVIATION - 1922**

*During the season of 1922*, the Canadian Parliament passed a bill entitled "The National Defence Act, 1922" creating the Department of National Defence, through the amalgamation of the Departments of Militia and Defence and the Naval Service and the Air Board. It was provided that "the Act should come into effect upon a date to be announced by proclamation"; and His Excellency the Governor General in Council subsequently issued a "*proclamation*" which brought the National Defence Act *into effect* from January 1, 1923.

Minister of National Defence : Hon. E. M. Macdonald, K.C., LL.B.

Minister's Private Secretary : Major T. W. MacDowell, V.C., D.S.O.

Deputy Minister : G. J. Desbarats, Esq., C.M.G.

**Canadian Defence Council**

President : The Hon. the Minister of National Defence : E. M. Macdonald, K.C., LL.B.

Vice President : The Deputy Minister of National Defence : G. J. Desbarats, Esq., C.M.G.

Members:

1. The Chief of Staff,
2. The Director of the Naval Service.

Associate Members:

1. The Adjutant General,
2. The Quartermaster-General,
3. The Director of the "Canadian" Air Force.

Secretary—A. B. Goldwyer-Lewis, Esq., B.A.

**Military and Naval Branches**

Chief of Staff : Major Gen. J. H. MacBrien, C.B., C.M.G., D.S.O.

Director of the Naval Service : Commodore W. Hose, C.B.E., A.D.C.

Quartermaster-General : Major Gen. E. C. Ashton, C.M.G., V.D.

Adjutant General : Major Gen. H. A. Panet, C.B., C.M.G., D.S.O.

Director of the Royal Canadian Air Force: Group Captain J. S. Scott, M.C., A.F.C., A.D.C.

**Civilian Branches**

Asst. Deputy Minister: H. W. Brown, Esq.

Secretary of Department : Lt.-Col. (Temporary) C. L. Panet.

Chief Accountant : R. P. Brown, Esq.

Director of Contracts : J. A. McCann, Esq.

Judge Advocate General—Bt. Major (temp.Col.) R. J. Orde.

Chief of the Printing and Stationery Branch, F. J. Boyle, Esq.

Chief Registration Clerk—A. E. Watterson, Esq.

**Branch of the General Staff**

Chief of Staff (National Defence)—Major-General

J. H. MacBrien, C.B., C.M.G., D.S.O., p.s.c.

Deputy Chief of the General Staff, and Director of Training and Staff Duties—Colonel A. G. L. McNaughton, temp. Col.-on-the-Staff (Hon. Brig.-Gen.), C.M.G., D.S.O., p.s.c.

Director of Military Training—Lieut.-Col. & Bt. Col. T. V. Anderson, D.S.O., R.C.E.

Director Military Operations and Intelligence— Bt. Col. (temp. Col.) J. S. Brown, C.M.G. D.S.O., p.s.c. (R.C.R.).

Director of Physical Training and Cadet Services— Lieut. Col. (temp. Col.) S. H. Hill, V.D., (m.s.c.) (s.m.h.) (s.s.).

Director of Historical Section—Major (temp. Col.) A. F. Duguid, D.S.O., (R.C.A.).

Staff Officer, Artillery Duties.—Colonel L. A. G. O. Roy, (R.C.A.).

Commandant Canadian Small Arms School— Lieut. Col. W. K. Walker, D.S.O., M.C.

Assistant Director Signals—Major (Brev. & temp. Lieut. Col.) E. Forde, D.S.O., (s.s.h.) (R.C.C. of S.).

Assistant Director Military Intelligence—Bt. Lt. Col. (Temp. Lieut. Col.) H. H. Matthews, C.M.G., D.S.O., (L.S.H., R.C.).

**Branch of the Adjutant-General**

Adjutant-General—Major-General H. A. Panet, C.B., C.M.G., D.S.O.

Director General of Medical Services—Bt. Col. H. M. Jacques, D.S.O. (R.C.A.M.C.).



## Notes on "Civil Aviation"

Director of Organisation and Personal Services— Lt. Col. (temp. Col.) C. H. Hill, D.S.O., A.D.C. (R.C.R.).  
Director of Pay Services—Colonel A. O. Lambert, (R.C.A.P.C.).  
Director of Records—Bt. Lieut.-Col. (temp. Col.) F. L. Armstrong, O.B.E.  
Deputy Director General of Medical Services—Lt.- Col. Brev. Col., A. E. Snell, C.M.G., D.S.O., (R.C.A.M.C.)  
Assistant Director of Organization—(Bt. Lt.-Col. (temp. Lt.-Col.) H. J. Coghill, (P.P.C.L.I.)  
Assistant Director of Personal Services—Bt. Lt. Col. (temp. Lt.-Col.) D. McNiven, R.C.R.  
Assistant Director of Pay Services—Major H. T. Goodeve, R.C.A.P.C.

### Branch of the Quartermaster-General

Quartermaster-General—Major-General E. C. Ashton,  
C.M.G., V.D.  
Director of Engineer Services—Colonel A. C. Caldwell,  
(R.C.E.).  
Director of Supply and Transport—Lt. Col. (temp.  
Col.) H. C. Greer (R.C.A.S.C.)  
Director of Equipment and Ordnance Services—  
Bt. Lieut.-Col. (temp. Col.) M. C. Gillin, (R.-  
C.O.C.).  
Officer Administering Canadian Veterinary Services—  
Lieut.-Col. (Bt. Colonel) M. A. Piche, V.D.  
(R.C.A.V.C.)  
Assistant Director of Engineer Services—Bt. Col.  
(temp. Lt.-Col) S. H. Osier, C.M.G., D.S.O.,  
R.C.E.  
Assistant Director of Supplies and Transport—  
Major E. H. Spearing, R.C.A.S.C., (acting).

### MILITARY SERVICE

1. The Canadian Militia is composed of the Active Militia and Reserve.
2. The Active Militia consists of the Canadian Permanent Force and the Units of the Active Militia of the several branches of the Service which are organized and perform annual training.
3. The Reserve Militia consists of Reserve Units and of all able bodied citizens between the ages of 18 and 60 with the following exemptions:
  1. Members of the King's Privy Council of Canada;
  2. Judges of all Courts of Justice;
  3. Members of the executive Councils of Provinces;
  4. Deputy Ministers of the Federal and Provincial Governments;
  5. Clergy and Ministers of all denominations;
  6. Telegraph clerks in actual employment;
  7. Officers and clerks regularly employed in the collection of revenue;
  8. Wardens and officers of all public prisons and lunatic asylums;
  9. Members of the Naval Militia;
  10. Members of the police force and fire brigade permanently employed in incorporated cities, towns and villages;
  11. Professors in colleges and universities and teachers in religious orders;
  12. Persons disabled by bodily or mental infirmity;
  13. The only son of a widow, being her only support;
  14. Pilots and apprentice pilots during the season of navigation;
  15. Persons who, from the doctrines of their religion, are averse to bearing arms or rendering personal military service, under such conditions as are prescribed.
4. The Reserve Formations of the Active Militia, as distinguished from the Reserve Militia mentioned in paragraph 3, comprise:—
  - (a) Reserve units of City & Rural Corps.
  - (b) Reserve Depots as may be provided for in the establishments laid down for the Canadian Militia.
  - (c) The Reserve of Officers.
5. The Permanent Force is a small body of all Arms. Its duties are mainly to provide training depots and schools for the Non-Permanent Active Militia and the staffs necessary at Defence Headquarters and the Military Districts.

## Notes on "Civil Aviation"

6. The Non-Permanent Active Militia is a force consisting of all branches of the service, its total authorized strength at present being 10,458 officers and 111,461 other ranks.

(b) In addition to the above, authority exists for the formation of further units but their actual organization and recruiting of personnel is not to be proceeded with at present.

(c) Roughly speaking, all branches and active units are organized upon the British Army system.

Terms of Enlistment:

7. (a) Permanent and Non-Permanent Active Militia for a period of 3 years.

(b) Reserve Militia, for such period as is prescribed (namely, to age limit for various ranks).

(c) The Permanent Active Militia is available at all times for general service.

(d) The Governor-General in Council may place the Militia, or any part thereof, on active service anywhere in Canada, and also beyond Canada, for the defence thereof, at any time when it appears advisable so to do by reason of emergency.

7 Jan 1922. Canada Gazette : Air Board Notice regarding use of ensign.

Hereby notice is given that for purposes connected with the conduct of Civil Aviation the ensign used to distinguish property and premises owned or occupied by the Air Board is as hereunder described: "*Light blue, in the dexter canton the Union and in the centre of the fly of the flag on a red shield edged with white, an albatross, white, with wings extended over three maple leaves conjoined on one stem, proper.*" - J.A. Wilson, Secretary Air Board, 30 Dec 1921.

January 1922 : Colonel Frank Searle (retired) CBE, DSO, MIME - Director of Daimler Air Hire and Daimler Airway publishes "THE REQUIREMENTS AND DIFFICULTIES OF AIR TRANSPORT" in THE AERONAUTICAL JOURNAL : Jan 1922 pg 3-10

Our three years' experience of civil flying since the war...

It must be borne in mind that at the beginning of the war the science of aviation was so young and the necessity for aircraft so great that both the management and the technical staffs of aircraft manufacturers were intensive productions, and from the beginning of the war to the end of it, were fostered on expensive lines; whilst at the same time the managements and technical staffs of other and more slowly-developed industries were all fully occupied and necessary in their own particular sphere.

Another very great factor was that these intensive staffs were reared in an' atmosphere of forced production with very little regard for economy either in personnel or material.

It is not very surprising, therefore, that when they made their momentous decision to go into aerial transport they went ahead on what to them was their ordinary business methods, namely, of extravagance in men and material, and, instead of enlisting new men and material, carried on with what existed at the moment...

*The operation and maintenance of their machines was carried on with lamentable lack of knowledge.*

For instance, whilst they employed a vast number of machines for the services which were maintained - and on which the overhead charges went on daily, there was a very serious shortage of spare parts and spare engines, and, in consequence, machines were lying idle whilst their engines were being repaired, which meant that they were not only losing their earning capacity but that the overheads of about '4 per day per machine were going on for two or three weeks.

*Again, little or no equipment was provided for doing repairs and inspections expeditiously, whereas a small capital outlay in this direction would have saved hundreds of pounds in labour.*

*Again, none of the executive heads of the concerns held ground engineers' tickets as granted by the Air Ministry.*

*"These (ground engineers') tickets were all held by mechanics, so the decision as to fitness or otherwise of a machine was in the hands of the workmen, whose word was final..."*

## Notes on "Civil Aviation"

It should, of course, have been imperative that those in charge held the necessary qualifications required by the Air Ministry<sup>183</sup>...The position of the Air Ministry in air transport is a most important question, and one which ought to be cleared up at once<sup>184</sup>...

At the present moment it combines the equivalents of Municipal Authorities, Trinity House, the Board of Trade and Lloyd's, and I will deal with the analogous functions in this order...

In regard to the Air Ministry acting as the equivalent of the Board of Trade and Lloyd's in marine matters, I have no objection to their doing the former's equivalent duties, but with regard to the latter I do feel that the time is here for owners, builders and underwriters to get together and form some sort of Lloyd's Committee so as to keep the Air Ministry advised of their requirements<sup>185</sup>.

The question is one of the utmost importance.

The Air Ministry has not yet the complete confidence of business men, and it is necessary for them to have some reliable source of information as to what regulations are necessary for the protection of all their Interests.

There are some very brilliant young men at the Air Ministry who are most thorough and conscientious in their work ; but when one deducts their negative commercial and economic experience of the war, one finds that experience with them cannot be expected.

And in a few cases, after deducting their negative war experience, they could not have had more than the meagre engineering or technical training of an apprentice or pupil...

These men in many cases have the power to dictate as to design and details of operation, and companies have no appeal from their considered opinions which are invariably based upon war experience and R.A.F. training.

*"Every official in the technical branches of the Air Ministry should be an engineer of good training and undoubted experience - excluding his war service".*

I should also like to mention the examinations for ground engineers.

*These are verbal examinations, and are therefore the most difficult to organise, and from what I have seen, they have a tendency to follow that unsound policy adopted temporarily years ago in some of the Board of Trade examinations for the marine engineers' tickets—it is that of trying to "catch" the applicant by trick questions (comprehensive questions?) instead of thoroughly ascertaining his education, experience and knowledge.*

*An example seen in the Air Ministry was a "stretching screw"—or turnbuckle— which had both ends screwed (threaded) to the same hand (direction); and the applicant was asked to examine it and state where it was faulty.*

I suggest that such "catches" are not a reasonable test either for education, experience or knowledge, which all goes to indicate that the examiners do not quite realise the essential qualifications of the holder of such a ticket, and I consider that the examination papers for the applicants for these tickets should be laid down by the committee to which I have referred...

The continued use of the pneumatic tyre surprises me... I feel sure that a solid-tyred wheel can be designed which will transmit safely all the shocks and forces to the undercarriage damping gear, and yet not be too heavy. The Germans used wooden tyres during the latter part of the war.

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<sup>183</sup> RAeS - THE AERONAUTICAL JOURNAL - Colonel Frank Searle CBE, DSO, MIME - Director of Daimler Air Hire and Daimler Airway : THE REQUIREMENTS AND DIFFICULTIES OF AIR TRANSPORT : Jan 1922 pg 3-10

<sup>184</sup> RAeS - THE AERONAUTICAL JOURNAL - Colonel Frank Searle CBE, DSO, MIME - Director of Daimler Air Hire and Daimler Airway : THE REQUIREMENTS AND DIFFICULTIES OF AIR TRANSPORT : Jan 1922 pg 3-10

<sup>185</sup> RAeS - THE AERONAUTICAL JOURNAL - Colonel Frank Searle CBE, DSO, MIME - Director of Daimler Air Hire and Daimler Airway : THE REQUIREMENTS AND DIFFICULTIES OF AIR TRANSPORT : Jan 1922 pg 3-10

## Notes on "Civil Aviation"

My critics will now tell me that they soon changed to pneumatics whenever they could get them. This is true, but one must bear in mind that the *German undercarriages are not as shock absorbing as ours, and the fact remains that the German wheels stood up very well.*<sup>186</sup>

February 1922 : Aerial Transportation Notes <sup>187</sup>

Plans for an air service between London, Eng., and Cork, Ireland, are reported as being made. The service will, it is said, be arranged in connection with trans-Atlantic steamships, and it is claimed that a day could be saved on the trip from London to New York by the use of such a service.

Major Cotton, who made an abortive attempt to establish a mail service between Newfoundland and Nova Scotia on Dec. 10, 1921, is reported to have arrived at Botwood, Nfld., Jan. 16, to arrange for another attempt. The proposed route is from Botwood to Halifax, with a possible stop at Sydney.

The special ensign to be flown over the Canada Air Board's properties is described as follows:—Light blue, in the dexter canton the Union and, in the center of the fly of the flag, on a red shield edged with white, an albatross, white, with wings extended over three maple leaves conjoined on one stem, proper.

The Canada Air Board is about to appoint an Air Wireless Inspector for the Operations Branch at High River, Alta., at an initial salary of \$2,340, and an air photographer for the operations branch at an initial salary of \$1,800 a year. Applications will be received by the Civil Service Commission at Ottawa to Feb. 9.

The Canada Air Board has added the following to the Air Regulations 1920:

"No person shall enter or attempt to enter any aircraft in flight; or leave or attempt to leave any aircraft in flight, except for the purposes of making a parachute descent; or give, upon any aircraft in (light, any gymnastic or other like exhibition."

March 1922 : Aerial Transportation Notes. as above pg 135.

R. H. Nisbet is reported to have said in speaking at Quebec recently that while the aeroplane is the photographer par excellence in most of the work undertaken in surveys in Canada, it is of little service for survey work with the present mechanical devices at its disposal, and that co-operation with ground surveyors is essential to its success.

Captain Maxwell and a pilot are reported to have completed a round aerial trip carrying mail, from Cochrane to Moose Factory, Ont., Feb. 6. The northward trip was made Feb. 4, the distance being covered in two hours and 10 minutes, and the return trip was made on Feb. 6. On the latter date several stops were made in the vicinity of the Abitibi River to test the machine on different kinds of snow.

A successful test of an experimental helicopter is reported to have been made at Farnborough, Eng., Feb. 9. The machine, which weighed over a ton, and carried a pilot and over 250 lbs. of excess weight, together with a large supply of gasoline, is said to have risen from the ground, to have hovered in the air for some minutes and then landed practically on the spot from which it rose.

A mechanical air pilot is reported to have been given a successful test at London, Eng., recently. The aeroplane is fitted with twin engines, and the piloting device is placed between them. It is said that at the test the plane, carrying 12 persons, ascended to a height of over 1,000 feet, and that the pilot then put his hands in his pockets and let the mechanical device take charge. The test lasted for half an hour, the plane travelling at 80 miles an hour.

June 1922 : The Newfoundland Government is reported to have made a contract with the Aerial Survey Co., for the carrying of mail from St. John's round the Fogo district. as above pg 302.

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<sup>186</sup> RAeS - THE AERONAUTICAL JOURNAL - Colonel Frank Searle CBE, DSO, MIME - Director of Daimler Air Hire and Daimler Airway : THE REQUIREMENTS AND DIFFICULTIES OF AIR TRANSPORT : Jan 1922 pg 3-10

<sup>187</sup> CANADIAN RAILWAY AND MARINE WORLD , pg 67 February 1922 - Twenty-fifth Annual Volume from January to December, 1922 - ACTON BURROWS, PROPRIETOR 70 BOND STREET, TORONTO. CANADA

## Notes on "Civil Aviation"

A fortnightly aeroplane service is in operation from Cairo, Egypt, to Baghdad.

Irak, for all classes of mail, except parcels, and accelerates letter transportation 14 days or more to Baghdad and northern Persia, down to about 3 days in the case of places as far south as Bushire.

July 1922 : Aerial Transportation Notes.

Five hydroplanes will, it is reported, be employed during the summer in Northern

Manitoba for patrol purposes, and for paying treaty money to the wandering bands of Indians. The

planes will have their Victoria Beach, on Lake Winnipeg. The Canadian Aerial Service is reported to have made a proposition to

the Prince Edward Island Government for the establishment of an aerial mail service between the Island and Montreal.

N.B. Provincial aid is asked, and it is also proposed to ask the Dominion Government to contribute. A rate war is reported to be in progress among transportation lines between London, England, and Paris, France.

Imperial Airways announced a cut in rates for huge parcels of approximately 50%, reducing it from 5 shillings to 2 shillings 6 pence. This was in response to reduction from 10 shillings to 5 shillings. A French company operating over the same route is reported to have arranged a new schedule of freight charges on a scale wholly lower than the land rates.

October 1922 : Aerial Transportation Notes.

The Aerial Survey Co. is reported to have received 3 new aeroplanes at Bolton, England, from England for survey, mail transportation, and general transport work.

Giuseppe Pagliacci, who is spoken of as having been a celebrated Italian during the war, is reported to be working as a freight handler in the G.T.R. at Depot Harbor, Ontario.

Broome sailed from Victoria, B.C. Aug. 10, for Japan, to prepare the Kamchatka Peninsula and the Aleutian Islands for the Blake aeroplane flight round the world, which is since reported to have been abandoned.

*A London, England, cablegram states that the Civil Aviation Advisory Board on Imperial mail service suggests that the Imperial Government should grant a considerable measure of financial assistance to efficient civil attempts to keep open the Empire's airways.*

Major E. MacLaurin, in charge of the Dominion Government aeroplane station at Vancouver, B.C., was drowned Sept. 11, when a seaplane which he was piloting plunged into shallow water on the Point Grey shore of English Bay. A passenger sustained a broken leg, and the mechanic was injured in the back.

The Laurentide Airship Co., which is carrying on forestry survey and patrol operations from Grand Mere, Quebec, had one of its hydroplanes wrecked on the Saguenay River, near Tadoussac, Aug. 5. The plane had made a landing in the river, and was about to rise again, when it came in contact with a submerged log, which ripped out a large part of the bottom of the machine.

A London, England, cable states that arrangements are projected to operate a mail and passenger airship service between London, England, and Bombay, India, the airships to have a capacity of 5,000,000 cu. ft., to be capable of flying 80 miles an hour, and to carry 200 passengers, the trip is to be made in three days, and the fares to be charged \$300 for 1st. class accommodation, and \$175 for 2nd. class.

The Canadian Forestry Association has issued a pamphlet, in which it is stated that nearly 3,000 forest fires have been reported since the beginning of 1922, and that airplanes and seaplanes have been used to great advantage in locating fires and in reducing losses. Excellent work has been done in British Columbia, where 1,400 fires were reported, and in Central Quebec, which passed through its worst forest fire experience for many years.

The Dominion Government aeroplane station staff at Jericho Beach, B.C., according to a press report, has made 997 flights in about two years to July 21, flying 43,851 miles and carrying 1,700 passengers, the total passenger mileage being 436,084. The work done includes forestry reconnaissance, photography and patrol; photographic survey, exploration, communication, demonstration and transportation, geodetic survey work and customs patrol.

## Notes on "Civil Aviation"

Radio stations have been established at the Victoria Beach and Norway House aeroplane stations, in Manitoba, for use in connection with the Dominion Forestry Service. The distance between the two stations is approximately 300 miles. As an illustration of the value of the radio adjunct to the service, a forest fire was located in the vicinity of the Norway House station, on the morning of July 29, and within a few hours the available forces of the service were fighting the fires, which were got under control by night.

The Aerial Survey Co., which is making surveys at Hawkes Bay, Nfld., had a difference with its employees, recently, as to wages. Major Cotton, went to Hawkes Bay to effect a settlement, but the men refused to accept it, and struck.

About 150 of the men assembled at Hawkes Bay, and on Sept. 5, boarded the Reid Newfoundland Co's s.s. Home, and were to be taken to St. John's. On their demand being refused they took charge of the ship and it is reported they carried out their object; being subsequently taken to St. John's by train.

January 1922 : Air Service Between Newfoundland and Canada.

An experimental mail air service has been inaugurated between Newfoundland and Halifax, N.S. The first flight was to be made from Botwood, Nfld., to St. John's. Major Cotton had charge of the aeroplane, which, however, developed engine trouble and had to descend near Deer Lake, Nfld., after completing about 200 miles of the trip, which was apparently then abandoned. The Canadian Postmaster General authorized the carrying of mail from Halifax to Newfoundland, by the route, but declined to take any risk in connection with letters, dispatched by the mail. Such letters were in addition to being prepaid at the regular rate of 4c. an ounce, to have an additional 30c. worth of stamps affixed, and were to be handed in to the post offices. and not to be mailed in the regular way.

1922 : British civilian pilots win the Schneider Trophy. *CANADIAN RAILWAY AND MARINE WORLD* , pg 67 February 1922 - Twenty-fifth Annual Volume from January to December, 1922 - ACTON BURROWS, PROPRIETOR 70 BOND STREET, TORONTO. CANADA

1922 : Canadian Air Board - CAF officer Lt. W. Templeton killed when his HS-2L flying boat plunges into the water off Point Grey, BC and overturns on the beach, drowning him.

1922 : London, England. The Navigation of the Air is now governed by the Air Navigation Act, 1920 and Regulations of 1922 made thereunder.

By sections 1, 2, 3 and 4 of this Act power is given for Orders in Council to be made for licensing of aircraft, aerodromes, and pilots, and generally for the regulation and registration of air traffic and aircraft.

By sections 6 and 8 power is given to the Air Council [established by the Air Force (Constitution) Act, 1917] and to local authorities to establish aerodromes and to purchase land therefor. By section 20 the earlier air navigation Acts are repealed, but *certificates and licences issued thereunder are to continue in force.*

By para. 26 of the Air Navigation Regulations (p. 438, post) the Secretary of State may issue directions. The wording of this paragraph should be noted ; plainly the power to make regulations and impose fresh restrictions and liabilities on the public cannot be delegated to the Secretary of State. Detailed Directions, dated 11th July, 1922, and numbered A.N.D. 3 have been issued. These directions deal with: Registration, approval and inspection of aircraft ; Type aircraft ; Subsequent aircraft ; Modifications of aircraft ; Licensing of ground engineers ; Instruments [...]

### **AIR NAVIGATION ORDER, 1922.**

3. (1) *An aircraft shall not fly unless the following general conditions are General complied with :*

#### General conditions

- (i) The aircraft shall be registered and bear the prescribed nationality and of flying, registration marks and the name and residence of the owner affixed or painted on the aircraft in the prescribed manner ;
  - (ii) The aircraft shall be certified as airworthy in the prescribed manner, and any terms or conditions on or subject to which the certificate of airworthiness was granted shall be duly complied with ;
  - (iii) The personnel of the aircraft shall be provided with the prescribed certificates of competency and licences ;
  - (iv) There shall be carried in the aircraft the prescribed documents and the prescribed log books kept up to date in the prescribed form and manner :
- Provided that :

## Notes on "Civil Aviation"

(a) Conditions (i), (ii) and (iv) shall not apply to aircraft flown for the purpose of experiment or test only, within 3 miles of an aerodrome or aircraft factory, or in accordance with such directions (if any) as may be given by the Secretary of State ; and (b) Condition (iii) shall not apply in the case of candidates undergoing official tests for the purpose of obtaining a licence, or within 3 miles of an aerodrome in the case of personnel under instruction.

(c) Condition (ii) shall not apply before the first day of January, 1923, except in the case of passenger aircraft when carrying passengers, and aircraft engaged in international navigation.

(2) In this article "prescribed," in relation to aircraft other than British aircraft registered in the British Islands, means prescribed by the law of the State on whose register the aircraft is entered and in relation to British aircraft, registered in the British Islands has the meaning assigned to it by article 27 of this Order.

*The provisions in Schedules I to VIII inclusive to this Order shall have effect as part of this Order, and shall be duly observed by all persons concerned in the cases to which they relate, that is to say:*

Source ref : UK - METROPOLITAN TRAFFIC MANUAL,  
CONTAINING

The Law relating to Road, River and Air Traffic in London and elsewhere.

BY CARROL ROMER, M.A.,

OF THE INNER TEMPLE AND SOUTH-EASTERN CIRCUIT, - Barrister-at-Law.

1922 : Controller of Canadian Civil Aviation : Air Chief Marshal [note 1] Lloyd Samuel Breadner, CB, DSC (July 14, 1894 – March 14, 1952) was a Canadian military pilot and Chief of the Air Staff during World War II.

### Early career

Breadner obtained his pilot's certificate at Wright Flying School and was commissioned in the British Royal Naval Air Service on December 28, 1915. During World War I he served on the Western Front as a fighter pilot in the No. 3 (Naval) Squadron. He was promoted to Flight Lieutenant (RNAS) on 31 December 1916. He was awarded the Distinguished Service Cross on May 23, 1917. The citation read:

For conspicuous gallantry and skill in leading his patrol against hostile formations. He has himself brought down three hostile machines and forced several others to land. On the 6th April, 1917, he drove down a hostile machine which was wrecked while attempting to land in a ploughed field. On the morning of the 11th April, 1917, he destroyed a hostile machine which fell in flames, brought down another in a spinning nose dive with one wing folded up, and forced a third to land.

— London Gazette[1]

He was released from the RAF [note 2] with the rank of major[note 3] in March 1919.

### Command

He was commissioned promoted to Squadron Leader in 1920 and transferred to the Royal Canadian Air Force (RCAF) on its formation in 1924. He became Controller of Civil Aviation in 1922, and later commanded Camp Borden from January 15, 1924 to September 23, 1925. He was promoted to Wing Commander on April 1, 1924. After attending RAF Staff College, he was the Director of the RCAF from February 15, 1928 to April 29, 1932. From 1932 until 1935 he commanded Trenton and then attended the Imperial Defence College. He was promoted to Group Captain on February 1, 1936 and to Air Commodore on August 4, 1938. He became Chief of Air Staff on May 29, 1940 and having been promoted to Air Marshal on November 19, 1941, became Air Officer Commanding-in-Chief RCAF Overseas in January 1944. Breadner was promoted on his retirement on November 25, 1945 to Air Chief Marshal, the first Canadian to hold this rank.

On November 30, 1944, while he was Chief of Air Staff, his son, Flying Officer Donald Lloyd Breadner, was killed after an air gunnery exercise, while flying a de Havilland Mosquito from RCAF Station Debert, in Nova Scotia. He was the only son of Breadner and his wife, Mary Evelyn. They also had three daughters.[2]

### Awards

- May 23, 1917: Distinguished Service Cross
- January 1, 1943: Companion, Order of the Bath
- October 25, 1943: Military Cross, First Class (Belgium)
- August 25, 1944: Grand Officers Cross of Polonia Restituta (Poland)
- October 5, 1946: Order of the White Lion, Class II (Czechoslovakia)
- December 20, 1946: Legion of Merit (Degree of Commander)
- September 12, 1947: Commander of the Legion of Honour (France)
- June 12, 1948: King Haakon VII's Cross of Liberty (Norway)

### References and notes

#### Notes



## Notes on “Civil Aviation”

1 This rank was used by the 20th century Royal Canadian Air Force and replaced with the rank of General in 1968 with the unification of the Canadian Forces, a rank which has been retained in the 21st century Royal Canadian Air Force. See Category:Canadian Forces Air Command generals Royal Canadian Air Force generals for such officers. Breadner was one of only two Canadian Air Chief Marshals, the other being Frank Robert Miller.

2 The RNAS had been joined with the Royal Flying Corps in 1918

3 The RAF used Army-style ranks until mid-1919.

### Citations

1 The London Gazette: (Supplement) no. 30088. p. 5053. 23 May 1917. Retrieved 28 October 2010.

2 "Donald Lloyd Breadner," Canadian Virtual War Memorial, <http://www.veterans.gc.ca/eng/collections/virtualmem/Detail/2687294?DONALD%20LLOYD%20BREADNER>

1922 : overall responsibility for UK air defence was transferred from the War Office to the Air Ministry.

14 January 1922 : “Martynside” Aeroplane on Quidi Vidi Lake flight from Botwood to Halifax - aborted due to oil loss - Major F.S. Cotton & Capt. V.S. Bennett land on the ice landing on ice on Quidi Vidi on flat skids in St. John’s after a 2 hour flight. The Martynside is a plane similar to that which Mr. Raynham had at Pleasantville for the contemplated trans-Atlantic flight, which did not materialize owing to hard luck on each occasion that the flight was attempted. <sup>188</sup>

January 1922 : the UK Air Ministry orders two prototypes of an all duralumin two-seat fighter sea plane from Shorts Bros. the Air Ministry, satisfied with the Silver Streak test results, believes all-metal aircraft construction is sound.

1922 –1923 ex-Royal Navy officer Charles Dennistoun Burney proposes Imperial Airship Service. in 1924 after an extensive political tug-of-war by Ramsay MacDonald’s first ever Labour government in Britain. The man behind the "scheme" (Programme) was the new Labour Secretary of State for Air, Lord Thomson of Cardington.

03 April 1922 : English aviation company Daimler Hire commences operations with DH.18A Ser.No.04 “G-EAWO”. Frank Searle - Managing Director. Managing the aircraft as Daimler Hire managed their cars – each to be used a minimum of 20,000 miles a year – Searle and George E Woods Humphery, (Major Woods Humphery, an engineer and a former RFC pilot and general manager of Handley-Page Transport) set a standard of 1,000 hours per year per aircraft. This and “other control of overhead expenses” let Daimler Hire run much more efficiently than its competitors. Daimler Hire ordered 9, but operated a total of 6 (of 12 built) 10 passenger de Havilland DH.34 single-engined cabin biplanes between Croydon and Paris. . G-EBBQ - DeH’s prototype, G-EBBT, G-EBBX Ser. no 35 - certificate of airworthiness issued on 19 September 1922, G-EBBS,

07 April 1922 : “Daimler Hire” DH.18A “G-EAWO” bound for Le Bourget collides with Farman F.60 Goliath “F-GEAD” operated by Cie des Grands Express Aérien in drizzle and fog at an altitude of 150 m (492 ft - losing a wing and its tail then plummeting to earth. F-GEAD crashes shortly thereafter. This is the first-ever mid-air collision between airliners, killing all 7 onboard.

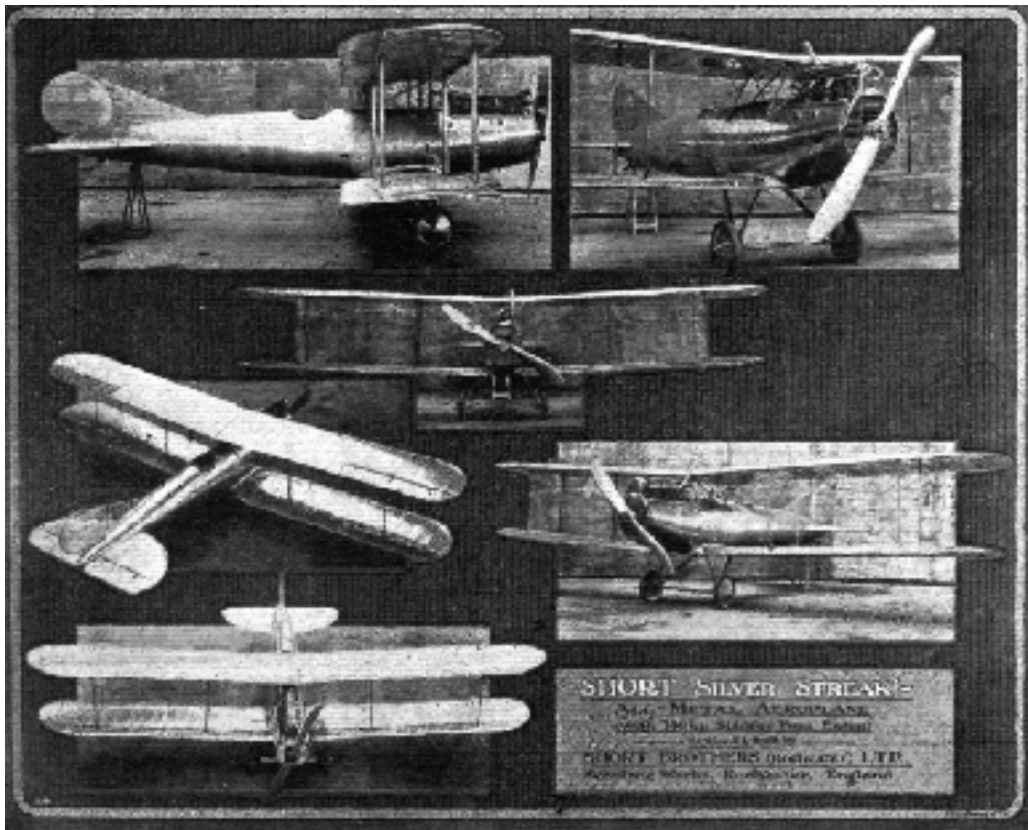
Both pilots were using the same railway line in order to navigate. French airline Compagnie des Grands Express Aériens (F-CGEA) left the Paris airdrome at Le Bourget for London at noon today, carrying three passengers, a pilot and a mechanic collided at about 2 o’clock with an English Daimler Airway DH.18A biplane airplane coming from London, (G-EAWO) with just one pilot on board, Lieutenant R. E. Duke, as well as a young steward, a Mr. Hesterman carrying mail and who survived the crash but succumbed to his injuries a short while later , but no passengers. Awhile later, just after the noon bell struck, a Farman F.60 Goliath (F-GEAD) took off from Le Bourget enroute to Croydon, flown by its pilot, M. Mire, with a mechanic on board as well. Three passengers had purchased tickets on the Goliath, a Frenchman named M. Bouriez and two Americans, a new husband and wife in France for their honeymoon, Mr. and Mrs. Christopher B. Yule, who were flying to London, from which they intended to take a train (probably to Portsmouth) for ship passage back to New York All but one person on board both machines were killed. The catastrophe took place in a fog near Grandvilliers in the Oise Department. The machines burst into flames in the air. At the time, an informal practice existed that one should offset from navigational landmarks based on the rules of the road, thus, a French pilot would fly up a roadway, offset to the right side and looking down on the road to the left. Opposing traffic therefore would pass also on the left. The same informal practice was done in England, though few considered the potential international conflict based on English roadway rules, cars had right hand drive and drove on the left side of the roads! Thus, the British pilot of the Daimler Airway flight naturally offset to the left, not to the right.

In London, following the French model pioneered by CGEA, a new airline had just been formed from the remnants of an earlier failed venture. This was the new Daimler Airway (note, not Airways, as often misreported in modern history documents). In February 1921, the former air branch of Daimler Hire was put into new ownership, though it would take some time before aircraft

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<sup>188</sup> THE CANADIAN AEROPHILATELIST September 2014, Page 11 - 1922 – Major Cotton arrives in St John’s - Bill Beaudoin





were acquired and the working components of an airline were in place. In April 1922, just a few days before the events described here, the airline had started its service with newly acquired de Havilland DH.18A aircraft, a single-engined biplane with a cabin for passengers. The first flights were under contract to deliver the mail to Paris, starting just days before on April 2, 1922.

CGEA's Farman F.60 Goliath, the world's first true airliner, had been carrying out regularly scheduled flights between Paris and London since 1919. By 1922, approximately 20 to 40 passengers per day flew between London and Paris. Among the various airlines plying the route, a total of six daily flights could be counted. Two years later, nearly to the day on April 1, 1924, Daimler Airway would be merged with Handley Page Transport, Instone Air Line and British Marine Air Navigation. Together, they would form the new Imperial Airways which itself set a new and higher standard for air travel in the passenger industry.

"In my own name and that of the (British) Air Council, I offer you my deep sympathy on the fatal air collision which occurred yesterday, the only accident of this kind in the history of air transport between Great Britain and France" – Frederick Guest, Secretary of State for Air.

Following the accident, a meeting was held at Croydon Airport<sup>189</sup> by representatives of Compagnie des Grands Express Aériens, Compagnie des Messageries Aériennes, Daimler Airway, Handley Page Transport, Instone Air Line and KLM, as well as two representatives from the Air Ministry and various pilots employed by the companies. Amongst the resolutions passed at the meeting were:

- a) that "keep to the right" was to become the universal rule of the air,
- b) new airliners should provide a clear view ahead for the pilot, and
- c) that all airliners should be equipped with radio.
- d) Clearly defined air routes were to be introduced in Belgium, France, the Netherlands and the United Kingdom

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<sup>189</sup> "Airway Rules". *The Times*, London. 15 April 1922. col E, p. 12

## Notes on "Civil Aviation"

June 1922 : the UK Air Ministry cancels orders for the two two-seat fighter sea plane prototypes citing "Financial concerns". the Short Springbok evolves from the Silver Streak, and its construction techniques are employed in future aircraft. ("The Olympia 1920 Aero Show" *Flight* (22 July 1920) "Air Ministry Acquire Short 'Silver Streak'" *Flight* (24 February 1921) "Short Bros. and Metal Construction" *Flight* (11 December 1924)

22 June 1922 : RAF short Service Commissions : Short Service Commissions in the Royal Air Force

THE Air Ministry announces that vacancies exist for suitable candidates between the ages of 18 and 25 for shortservice commissions for flying duties in the Royal Air Force. Applicants are interviewed by a Selection Committee at the Air Ministry, and those selected and found medically fit are gazetted as Pilot Officers (on probation). The probationary period is six months, after which, subject to satisfactory progress, officers are confirmed in rank.

Short-service commissions are granted for four years' service on the active list, which may be extended by one year in the case of officers desirous and recommended. On completion of service on the active list, officers normally pass to the Reserve and receive a gratuity of £75 for each completed year's service : thus, if an officer completes four years and does not extend his service, he would receive a gratuity of ^ 300 on passing to the Reserve.

Officers in the Reserve receive retaining fees and are required to undergo short periods of training each year. For all purposes of pay, allowances and promotion, short-service officers receive equal treatment with officers holding permanent commissions. All officers entered under this scheme are taught to fly, and facilities are afforded, when possible, to specialise in certain other subjects. Candidates desirous of consideration under this scheme should apply by letter to the Secretary, Air Ministry (S. 7), Kingsway, W.C. 2.

11 July 1922 : I.C.A.N comes into effect.

July 1922 : the UK Air Ministry reports that it has tested the Silver Streak to destruction.<sup>190</sup>

- a) No corrosion issues were encounter with the duralumin used in its construction.
- b) the wing failed just above its calculated ultimate stress level when the Steel tube spar buckled during "loading" tests,
- c) Even with the buckled spar, the wing still possessed enough structural integrity for "normal" flight.
- d) The tail and rudder are separately tested and fail under a load far in excess of what a wooden tail and rudder can withstand.
- e) The fuselage survives a 2,000 lb-ft (2,712 N•m) torsion test with no visible distortion.
- f) The fuselage was subjected to 100 hours of vibration tests which revealed no signs of cracks or loose rivets.

23 April 1922: Flight Lieutenant H.L. Holland killed in Airco DH.4 crash near Brantford, Ont. First Canadian Air Force officer lost in (civil post-war) operations.

28 June 1922 : PM King disbands the Canadian Air Board - folds Canadian Air Board responsibilities into the new DND. The Air Board Civil Air "Operations Branch" is merged with the CAF. *Effectively all "Board Stations" become CAF Air Stations, and all Civilian members of the civil service receive temporary comissions in the CAF.* Civilian and Service (Military) aircraft safety and accident investigation becomes the responsibility of the Directorate of Flight Safety of the DND.

### June 1922 : International Air Congress, London

June 1922 : British Empire's "Civilian Aviation Operations Branch, Canada" consolidated with the Canadian Air Force into a single organization.

1922 : Canadian Air Board operates surplus WW1 Felixtow F3 flying boats

1922 Laurentide Air Service (Elwood Wilson and Stuart Graham) begins operation with Curtiss HS2-L flying boat, Loening Air Yacht, Vickers Viking, Westland Limousine, de Havilland DH.9. They employ 10 pilots & 8-10 Air Engineers.

14 March 1922 : Percy Hanford receives "Qualified Air Engineer" Certificate #209. His rate of pay = 1 dollar per flying hour of all machines flown, with a minimum of \$100 per month - Edm. Flying Club.

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<sup>190</sup> ("The Olympia 1920 Aero Show" *Flight* (22 July 1920) "Air Ministry Acquire Short 'Silver Streak'" *Flight* (24 February 1921) "Short Bros. and Metal Construction" *Flight* (11 December 1924)

## Notes on "Civil Aviation"

1922 : Canadian Government Air operations employed 270 persons. The machines used are obsolescent war type machines, many of which require replacement by modern machines, with better performance, specially designed for the work to be undertaken and the natural conditions in the various localities in which they are employed. Proposals for replacement of the existing types are under consideration.

31 August 1922 : THE scheme suggested by Admiral Mark Kerr, to which reference is made above, is as follows :—

The Air Ministry shall consist of :—

Secretary of State ; Air Secretary.

Air Council, consisting of : War C.O.S., with Deputy C.O.S., R.N.A.S., and Deputy C.O.S., R.F.C. ; Navy Member ; Army Member ; Finance Member ; Personnel Member ; Experimental Member ; Training Member ; Civil COS., with Deputy C.O.S. for Lighter-than-Air and Deputy C.O.S. for Heavier-than-Air.

1. There shall be an Air Member on the Board of Admiralty and one on the Army Council.

2. All experimenting work, training, building and contracting shall be done by the Air Council, Ministry and Air Force.

3. All the personnel will be entered and trained by the Royal Air Force under the direction of the Air Council.

There will be both Naval and Military Air Classes of Instruction, in which the instructors are taken from the Air Service for which his class is being trained. The first term of instruction shall consist of general knowledge classes, and at the end of it pupils will be divided into the Naval and Military classes. Pupils will have the right of selection, but it will not be guaranteed that they shall join the branch that they select, as regard will always be paid to the qualifications and temperament of the individual in appointing him to any particular branch of the Service. If, in the course of training, a pupil be found to be more suitable for some other branch than that which he has been working for, he will be changed to . that line for which he is most suited.

4. The Navy and Army will indent on the Air Ministry for their requirements in personnel and material for the Royal Naval Air Service and Royal Flying Corps respectively. When such supplies have taken place, they will become part of the Service, R.N.A.S. or R.F.C., and be under the complete control of the Admiralty or War Office, as the case may be.

5. Records of the officers and men of the R.N.A.S. and R.F.C. are to be rendered to the Air Ministry, and all information as to performance of machines, etc., by the Admiralty and War Office. The Air Ministry will reciprocate in these matters with regard to the officers from the R.N.A.S. and R.F.C., who are serving under the orders of the Air Ministry.

6. The personnel of the Air Ministry and Royal Air Force shall be drawn from the R.N.A.S. and R.F.C.

7. In the case of disagreement on any subject of policy or other cause which the Secretaries of State and First Lord of Admiralty cannot agree on, the matter shall be referred to the Cabinet.

8. The Air Ministry's Estimates shall only be made out for the personnel and departments and the administration for which it is responsible, and which is actually under its orders. The personnel of the R.N.A.S. and the building of all aircraft hangars, etc., which the Air Ministry orders or builds for the Navy or Army shall be charged to the Naval and Military

## Notes on "Civil Aviation"

Estimates, as the case may be.

9. The Air Ministry shall have its own Medical Department, especially trained for the Air Services, and they shall provide specialists for aerodromes and squadrons as necessary, as well as for the Air Hospitals. src flight pg 492 aug 1922

## CANADIAN AVIATION - 1923

01 January 1923 : National Defence Act - Canada, Comes into force

Mr. G.J Dsbarats C.M.G is Deputy Min of the Naval Service and will continue in that capacity until 28 Feb 1923. Under the National Defence Act, 1923 which comes into effect this day, the Dept. of the Militia, the Dept. of the Naval Service and the Air Board are amalgamated as "The Dept. of Nat'l Defence" Mr. Dsbarats is to be the comptroller and has been appointed as "Acting Deputy Minister - Nat'l Defence. The actual Deputy Minister Maj.-Gen. Sir Eugene Fiset, being on a year's leave of absence.

10 January 1923 : Airco DH.16 G-EALM operated by the De Havilland Aeroplane Hire Service crashes at Stanmore, killing the pilot and 1 passenger, three other passengers are injured.

1923 : UK Air Ministry introduces the "approved firm" system. Select firms are approved by the Air Ministry for conducting their own inspection of aircraft during construction, under A.I.D. supervision. ( Flight - March 1939 page 227 - Airworthiness and the ARB)

1923 : Hambling Committee (UK) concludes that any "existing British Air Lines should be amalgamated into a state run company"

**1 January 1923** : Civil Air Board ceases to exist in Canada. Air Board duties re-assigned to the DND.

1 January 1923 : National Defence Act (Canada) comes into force Canadian Parliament makes Canadian Minister of National Defence responsible for:

1. Department of the Defence
  - (a) assumes responsibility for all government "Service" flying operations
  - (b) assumes responsibility for the control of "Civilian" aviation.
2. Department of the Naval Service
3. Department of the Air Board
4. Department of the Militia

**1 January 1923. the Canadian Military controls all government flying operations and civil aviation.** The former Air Board, predominantly civilian in nature, now came under the control of the chief of the general staff, DND.

5 January 1923 : application for "Royal" designation made to the Secretary of State for External Affairs.

6 February 1923 : the Air Board issues disposal instructions for Airship and Balloons received as part of the Imperial Gift.

15 February 1923 : Formal reply re "Royal" designation of the CAF received from the United Kingdom Secretary of State for the Colonies in England received.

### Air Navigation Act, 1920 provisions governed in Schedules I to VIII inclusive to the AIR NAVIGATION ORDER, 1922

Schedule	Subject matter
I	Registration and marking of aircraft.
II	1. Certificates of airworthiness for aircraft 2. periodical overhaul and examination 3. detention of unairworthy aircraft.
III	Log books.
IV	Rules as to lights and signals and rules of the air.
V	Licensing of personnel.

## Notes on “Civil Aviation”

Air Navigation Act, 1920 provisions governed in Schedules I to VIII inclusive to the AIR NAVIGATION ORDER, 1922	
VI	Fees.
VII	Prohibited areas.
VIII	Customs rules as to aircraft arriving in or departing from the United Kingdom. :

12 March 1923 : Canadian Air Force Weekly Order No. 21/23 promulgates the new title “Royal Canadian Air Force”.

29 March 1923 : there are 817 British Civil aeroplanes on the register, 200 having been built since the beginning of 1919<sup>191</sup>.

19 March 1923 : In Parliament: Mr. Hugh Morrison asks the Secretary of State for Air the following questions:

- if he will cause inquiries to be made into the system of training **officers and N.C.Os.** as air-pilots at the flying school, Netheravon ;
- if such inquiries will state the number of times each individual student officer and non-commissioned officer of the present classes under instructions has been taken up in the Bristol fighters ;
- whether the system in vogue enables the non-commissioned officer student to obtain the same amount of training in the air as that given to the officer ; and, if not,
- whether steps will be taken to ensure such training for the non-commissioned officer, that there shall be no danger of failure at examination through an alleged lack of facilities.

In response Sir S. Hoare replied : I am obliged to my hon. friend for drawing my attention to this matter:

- It had lately appeared that the arrangements for the instruction of airmen at Netheravon were not satisfactory in respect of the amount of actual flying training which was being received. Orders were accordingly issued which will remove any deficiencies in that respect.
- I am to add that in the new class of officers and airman pilots which began on December 15 last, the airmen up to date have averaged 740 hours' flying and the officers 640 hours.

22 May 1923 : Wright Bros. wing warping patent expired.

23 May 1923 : Belgian airline Société Anonyme Belge d'Exploitation Aérienne “SABENA” is established as the Belgian national flag carrier, succeeding SNETA. The inaugural flight on the day of SABENAs foundation was by “O-BIEN” a WW1 surplus Airco D.H.9 bomber with a load of freight and mail went from Haren, Brussels via Ostend to Lympne, England. O-BIEN was re-registered OO-IEN in 1929.<sup>192</sup>

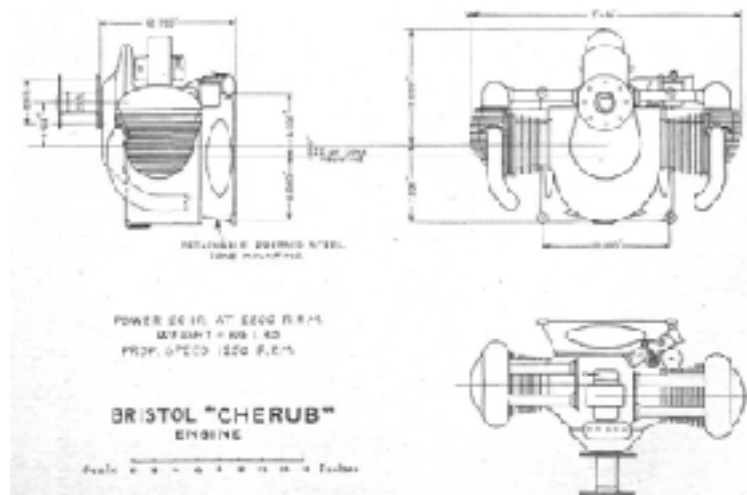
1923 : The Canadian Air Force consists of 49 officers and 262 men in “other ranks”.

Bristol Cherub Engine - Flight international

1923 : Price Brothers and Company ceases air operations.

1923 : Canadian federal government's Post Office department begins considering the use of airplanes to carry mail to remote places.

August 1923 : Squadron Leader Ambrose B. Shearer pilots an HS2L flying boat from Charlottetown to Grindstone Harbour on the Îles-de-la-Madeleine (Magdalen Islands) as part of the Post Office's investigative process. On his first attempt he has to return to base because of



<sup>191</sup> Secretary of State for Air Sir S. Hoare in response to question by Commander Bellairs in Parliament.

<sup>192</sup> [http://www.icao.int/secretariat/PostalHistory/iata\\_international\\_air\\_transport\\_association.htm](http://www.icao.int/secretariat/PostalHistory/iata_international_air_transport_association.htm)

## Notes on "Civil Aviation"

fog. His second flight was successful. Scheduled airmail service to the Magdalen Islands begins in 1928, when Canadian Trans-continental Airway initiates service<sup>193</sup>.

"British Air power must include a Home Defence Air Force of sufficient strength adequately to protect us against air attack by the strongest air force within striking distance of this country" - Prime Minister Stanley Baldwin, June 1923

1923-24 : UK- Britain eventually announcing, as an initial contribution towards the projected 52-squadron scheme, the Auxiliary Air Force and the Special

Reserve, each of which was constituted quite separately, so I now need to backtrack ten or fifteen years. While Trenchard's 1919 Memorandum had made some mention of auxiliaries, it was 1922 before firm proposals began to emerge, the Air Estimates for 1923-24 eventually announcing, as an initial contribution towards the projected 52-squadron scheme, the formation (over the next few years) of an additional fifteen regular squadrons plus five auxiliary squadrons.

This represented something of a change of heart as some influential figures (including Mr Churchill) had previously been of the opinion that it would be impossible for non-regulars to attain the levels of skill and efficiency that would be required. the Auxiliary Air Force and the Special Reserve, each of which was constituted quite separately, so I now need to backtrack ten or fifteen years.

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While the Air Force (Constitution) Act of 1917 had made provision for regulations relating to the Territorial Army to be applied to the projected air auxiliaries, this rather ad hoc arrangement was hardly satisfactory so the first thing that needed to be done was to provide the air force with something a little more specific. The result was the Auxiliary Air Force and Air Force Reserve Bill which was laid before the House in March 1924. 1930, this time sponsored by the Establishments Committee. The relevant facts were that one of the key distinctions between the SR and AAF units, whether or not their pilots were qualified on enlistment, had become blurred, because the SR was now accepting trained pilots while the AAF had started to provide in-house ab initio flying training. More importantly, however, recruiting of airmen for the Special Reserve had proved to be less straightforward than had been anticipated, because men had been reluctant to enlist in trades for which they were already qualified.

On reflection, it was perhaps understandable that a skilled metalworker, for instance, might well feel that he had had more than enough exposure to tin-bashing during the week and if he was going to sign on to work at weekends he wanted to do it as a 'chippy' or an electrician. This was not what the air force had had in mind, of course, but in order to get anywhere near the recruiting targets, many SR airmen had been accepted on these terms and to provide the necessary cross-training COs

had been obliged to mix their reservists with their regular personnel throughout the squadron. As a result, neither flight was exclusively manned by regulars, which more or less nullified the cadre concept. In effect, the SR units were tending to function as AAF squadrons but with

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<sup>193</sup> <https://legionmagazine.com/en/2005/11/up-with-mail/#sthash.RWIABB8L.dpuf>

## Notes on “Civil Aviation”

a much higher proportion of, expensive, full-time personnel – which was, no doubt, what had attracted the attention of the establishers. As a highly technical service the RAF depended on the outputs of the public and other secondary schools for most of its manpower and the RAFVR was to be no exception. Short Service Commission and specified attendance at either public or other secondary schools with achievement approximately up to the standard required for the School Certificate of the Oxford and Cambridge Examination Board. In practice, the term secondary school proved to be a catch-all which included not only the familiar grammar school but also a great variety of places where men could get themselves up to the required standards by part-time or evening study – for example in what were known as continuation schools and the night schools run by technical colleges. The reserve was to be taken to the men by making it as easy as possible for them to train whilst living at home and pursuing their normal civilian occupations. In 1923 the first edition of AP938, the regulations governing reserve service, was published and, perhaps as a result of the thinking exercises that its drafting had involved, questions had been raised over the need for reserve observer officers. AMP, Oliver Swann, recommended that 100 ex-wartime observers should be recruited into the reserve and, a little surprisingly, Trenchard actually agreed. They were to be assigned to Class B, however, which categorised them, not as aviators, but as technical officers with an annual refresher training commitment, although CAS had made it crystal clear that the air force could not actually afford to provide observers with any training at all! No change there then, and, it is hardly surprising that nothing like the required 100 ex-observer officers were prepared to sign up for a second dose of ritual humiliation. The RAFO Section of the Air Force List for March 1926, for instance, includes about forty. (ROYAL AIR FORCE RESERVE AND AUXILIARY FORCES - ROYAL AIR FORCE HISTORICAL SOCIETY.

27 August 1923 : Farman F.60 “Goliath” F-AECB operated by Air Union of France suffers an engine failure and crashes at East Malling, Kent killing 1 passenger. Contributing to the accident was passengers misunderstanding an “instruction to move aft” by the pilot, altering the aircraft’s centre of gravity.

September 1923 : Frank Whittle, aged 16 yrs, joins the September 1923 apprentice class, R.A.F Halton. During Whittle’s three years there, he was trained as a metal aircraft rigger. Probably because of the aircraft engineering aptitude he displayed building a large powered model aircraft in off-duty hours at the Model Aircraft Society, Whittle was one of five from his 600-man apprentice class selected for flight cadet training at the R. A. F. College, Cranwell. In his two years at Cranwell, Whittle learned to fly (surviving an engine failure in flight and the total loss of an airplane he flew into a tree on a foggy go-around), and he began thinking about how to achieve high-speed, long-range, high-altitude flight. His thesis was the starting point for his subsequent work on jet propulsion: “Future Developments in Aircraft Design. ” His flying instructor’s final comments in Whittle’s flight log included these words in red ink “inclined to perform to gallery and flies too low. ” Frank loved aerobatics. after four years with a permanent commission, to select a specialist course of advanced training, Whittle chose engineering. In August 1932 he was posted to the officers’ engineering course at Henlow, where he completed the twenty-four-month course in eighteen months.

The Air Ministry had by then discontinued its practice of sending one or two officers from Henlow on to Cambridge University for the Mechanical Sciences Tripos (an honors course named after the three-legged stool one sat on to take the oral examination).

Whittle persisted again and got the ministry to make an exception, so in July 1934 after being promoted to flight lieutenant, he was attached to the Cambridge University Air Squadron. In two years instead of the usual three, he took first-class honors and was then well grounded in the aerodynamic and material sciences he would need to succeed with his jet engine invention. While qualifying to be a flight instructor at the Central Flying School in 1929, ONE OF THE twentieth century’s best “hands on” engineers, Sir Frank Whittle, will be remembered as the earliest inventor of the aircraft turbojet engine, and for his persistence in demonstrating its feasibility in the face of initial rejection and despite later bureaucratic roadblocks thrown in his path by the British government.



## Notes on "Civil Aviation"

14 September 1923 : DH.34 "G-EBBS" operated by Daimler Airway makes a forced landing and crashes near the Ivinghoe beacon, Buckinghamshire in bad weather killing all five on board (2 pilots and 3 passengers). This is the first fatal accident on an "internal scheduled air service" in England / UK.

1923 The Government of Ontario purchases 13 "hydro-aeroplanes" at the cost of \$5,000.00 each <sup>194</sup> in 1924 it erects a hangar facility at Sault-Ste. Marie : 30' ceiling, dope room, machine shop, concrete floor above the dope room and machine shop (sound deadening) ... "will you explain to the Cmtee the necessity for centralising your aircraft in an extensive building of this kind for the winter? Why couldn't they be left in their stations all over the province?" A: Every machine has to be taken apart and the engines taken out and completely overhauled and the hulls have to be repaired just the same as the hull of a vessel" Mr. Finlayson: anyone who was in the ARMY knows something about that, but there are some laymen here who do not understand the necessity of absolute perfection in aircraft." The hulls are strong but delicate; the material is thin and they are covered over with canvas that has to be thoroughly waterproof, and any damage done has to be repaired during the winter, and you have to have a warm, comfortable place to carry it out, because there is the paint to go on and three or four coats of shellac on the canvas, and so on.

Q. And by centralizing them all you were able to keep your men employed for the winter?

A. Oh, yes. It had to be done somewhere. And then during the summer months all the engines are overhauled there. An engine operates eighty hours and is taken out, no matter how it is working and is sent back to the shop to be taken apart and overhauled and sent out again.

Q. In other words, you have surplus engines, and surplus stock is constantly being overhauled.

A. Exactly,

MR. WIDDIFIELD: What is a dope-room?

MR. FINLAYSON: Not what you think Mr. Widdifield.

A. It is a room used for mixing the dope they put on the machines and the canvas covering, a special waterproof composition, and has to be handled in a certain way.

THE CHAIRMAN: It is a term inherited from the army<sup>195</sup>.

HON. MR. LYONS- I think we have the only dope-room on the continent where men can work for ten hours at a time.

MR. FINLAYSON: In other words, the dope is applied to the craft and not the person.

MR. CLARKE: In other words, it is 4-4; it does not affect them.

MR. FINLAYSON: Not even invigorating or refreshing. Can you tell me

Mr. Lyons, how this aerodrome compares with other similar hangars on the continent.

A. As a matter of fact I never saw one myself, but I have been told by some American officers and by one or two people from the Old Country that it is the finest hangar they have ever seen anywhere.

If Q. Hangar is a synonymous term for aerodrome?

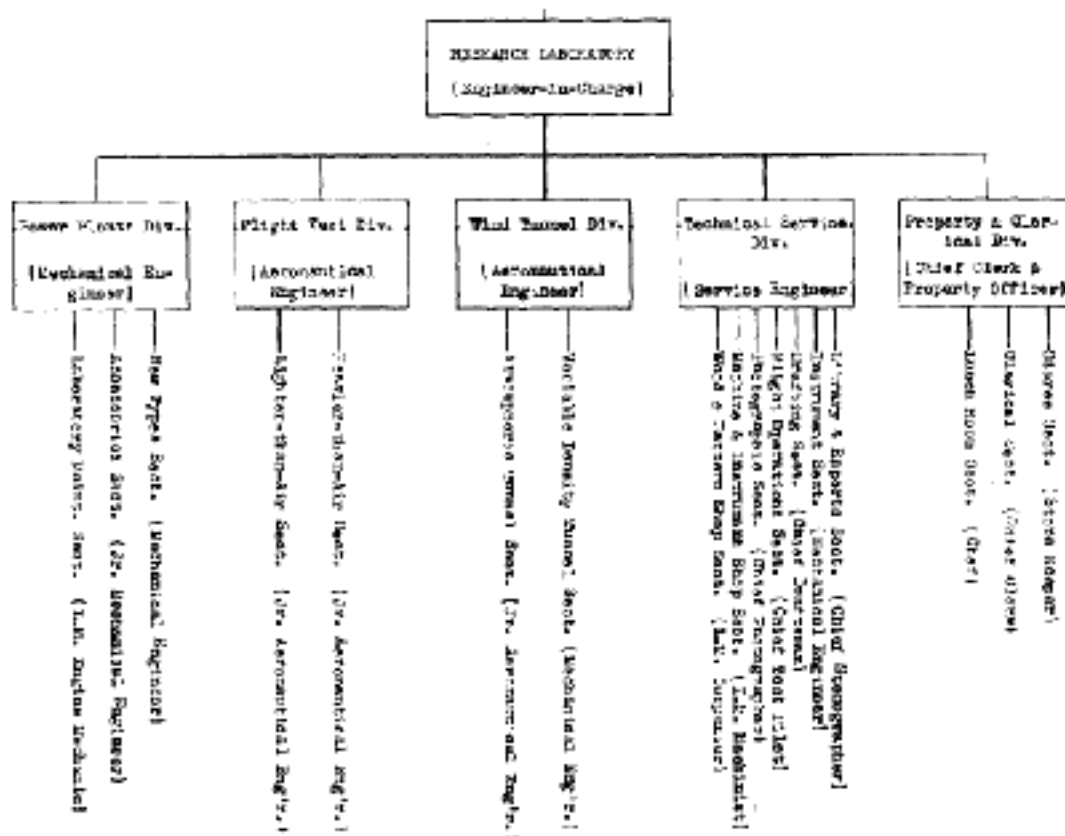
A. Yes.

October 1923 : The second Langley organization chart in

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<sup>194</sup> <https://archive.org/stream/journalsoflegisl6oontauoft#page/118/mode/2up/search/aircraft>

<sup>195</sup> <https://archive.org/details/journalsoflegisl6oontauoft?q=Air+Engineers%27>



A statistical comparison of 1923 with 1924 shows that in 1923 there were 69 licensed aircraft and 44 pilots and pilot-air engineers as against only 24 aircraft and 31 pilots in the following year. The amount of flying however goes up from 2,830 hr. in 1923 to 4,389 hr. in 1924 and the number of passengers carried goes up from 5,324 to 9090. The number of air engineers went down from 186 to 170. These figures are of great interest as showing the increased efficiency of modern equipment and better organization.

CANADIAN AVIATION - 1924

15 January 1924 : Government House : Ottawa, Canada : AT THE GOVERNMENT HOUSE AT OTTAWA (pg 2621 of the THE CANADA GAZETTE published 02 Feb 1924)

HIS EXCELLENCY THE GOVERNOR GENERAL IN COUNCIL

WHEREAS certain changes in the *International Convention for Air Navigation and its Annexes* have been found necessary and have been agreed to by the contracting states to this Convention in the interests of the better regulation of Air Navigation ; And whereas experience in the control of Civil Aviation in Canada has necessitated certain amendments to the Regulations for the Canadian Air Force, 1920

Therefore, His Excellency the Governor General in Council, on the recommendation of the Minister of National Defence, is pleased to approve and doth hereby approve the amendments and additions to said Regulations, shown on the attached schedule.

E. J. LEMAIRE - Clerk of the Privy Council .

Schedule of amendments AND ADDITIONS AIR Regulations CANADA, 1920

In accordance with the provisions of the National Defence Act, 1971, all reference to " The Air Banrd " in the Air Iteguhations shall ho cancelled and term " Minister of National Defence " substituted therefor Theae amendments and additions to the Air Iteguhations 1920 shall come into force forthwith upon their publication In the Canada (aatb, but no proceedings shall be commenced against any person founded upon any breach thereof committed within sixty days after the date of such publication except with the written consent of the Minister of National Defence .

The following sub-paragraph shall be iaaerted stta' pare . 2 subsection U, Part 1 .

V. " Contraotiog date " mans any state wh(eh it, for the time being, a party W the International Convention relating to Air Navigation, and those Regulations shall apply to aircraft pomeasing the nationality of a atate in nepeot of whioh state a derogation to His Malaty in the right of the Dominion of Canada has been granted under the protoool, as they apply to aircraft ponossing the nationality of a ontraotiog state.

The following sub-paragraph shai l . be inserted after pars. 3, Part II :

U) This paragraph does not apply to airantt duly registered in some other state or a foreign country with which Canada has made a Convention relating to interstate flying.

The following paratrapphs alull be substituted for paru. 8 and 9, Part 11 : 8.

(1) Upon every registration in Canada the Minister of National Defence aha11 aasipt to the registered aircraft a registration mark and shall grant a certificate of registration for which there alull be payable a fee of 16.

(2) In the event of any change in the ownership of an aircraft rogistered in Canada, then

(a) The registered owner shall forthwith notify the Department of National Defence, and

(b) The registration and certificate thereof shall lapse as from the date of such change of ownership .

9. When a registered aircraft has been de stroyed or permanently withdrawn from use, the registered owner shall as soon as possible notify the Department of National Defence aawrdingly, and the registration and the certificate thereof shalt lapse as from the data of such notification .

(2) Certificates of registration shall not remain valid unless endorsed by the Minister of National Defence at intervals not exceeding twelve enloodar months.

The following paragraphs shall be substituted for pat. 12, l'art 11 :

12, (1) No aircraft registered in Canada shall fly beyond Canada *unless it has been certified as airworthy by the Department of National Defence* .

## Notes on "Civil Aviation"

(2) Except private aircraft flying wholly within Canada, all aircraft registered in Canada shall be certified as airworthy by the *Department of National Defence* .

(9) Every aircraft entering Canada from abroad shall be in possession of a certificate of airworthiness issued by the proper authority of the foreign country or of the Dominion, Colony or Possession of Her Majesty in which it is registered .

The following sub-paragraph shall be inserted after para. 13, Part II :

(2) Certificate of airworthiness shall not remain valid unless endorsed by the Minister of National Defence at intervals not exceeding twelve months.

(3) Aircraft, in respect of which a certificate of airworthiness has been issued, under these regulations, may be inspected at any time by an authorised representative of the Minister of National Defence, and the Minister of National

Defence may, as a result of such inspection, annul or suspend the certificate of airworthiness of any aircraft deemed to be unsafe.

(4) Any certificate relating to the airworthiness of an aircraft may be cancelled or withdrawn at any time by the Minister of *National Defence* for cause.

The following sub-paragraph shall be inserted after para. 27, Part III :

27. (2) All state aircraft shall have at all reasonable times, the right of access to any licensed air harbour, subject to the conditions of the license.

The following paragraph shall be substituted for para. 30, Part III :

30. At every aerodrome and seaplane station, if an aircraft about to land or leave finds it necessary to make a circuit or partial circuit, such circuit or partial circuit shall, except in case of distress, be left handed (anticlockwise)

The following paragraph shall be substituted for para. 33 (2) (b) :

(b) To pilots, navigators and engineers of aircraft registered in another country, or a foreign country with which Canada has made a convention relating to Interstate flying, who hold licences authorising them to do so, issued by the proper authority in the country of registration or foreign country in which the aircraft is registered .

The following sub-paragraph shall be inserted after para. 48, Part IV .

48. (2) Licenses issued by the competent authority within His Majesty's Dominion, Colonies or Possessions, to a pilot, navigator or engineer shall for the purpose of these regulations have the same validity and effect as if they had been issued under these Regulations .

The following paragraphs shall be substituted for para. 98, Part X :

98. (1) No foreign aircraft flying between two points within Canada and no aircraft proceeding to or entering Canada from abroad shall carry any explosives or any arms or munitions of war.

(2) No aircraft shall enter or leave Canada having any secret or disguised place adapted for concealing goods.

The following paragraphs shall be substituted for para. 114, Part XI :

114. No commercial aircraft shall fly on any day unless it has previously been inspected by an Air Engineer on that day, or, in the case of a flight commencing not later than eight o'clock in the morning at some time between noon of the previous day, or the termination of the last flight made by the aircraft on the previous day, whichever is the later, and the commencement of the flight in question, and until such Air Engineer has signed certificates of the fitness of the flying machine to fly and the certificates

have been countersigned by the pilot . A certificate shall be entered in the log book of the aircraft and the log book of each engine and duplicates thereof may be delivered to the owner of the aircraft .

(2) If the Minister of National Defence has reason to believe, on complaint or otherwise, that a commercial aircraft within Canada is intended or is about to proceed on any flight in contravention to these regulations or while in a condition unfit for flight, he may give such directions and take such steps, by way of provisional detention of the aircraft, or otherwise in relation thereto, as may be necessary for the purpose of causing the circumstances relating to the flight to be investigated, or the aircraft to be inspected by authorised representatives of the Minister of National Defence, and may, upon the result of such investigation or inspection,

## Notes on "Civil Aviation"

cause the aircraft to be detained until he is satisfied that the regulations are being complied with, or until such alterations or repairs as he may consider necessary to render the aircraft fit for flight have been made.

(3) No person acting as, or carried in an aircraft for the purpose of acting as, pilot, navigator, Engineer, or operative member of the crew thereof, shall, while so acting or carried, be in a state of intoxication, or in a state in which, by reason of his having taken or used any sedative, narcotic or stimulant drug or preparation, his capacity to so act is impaired.

The following paragraph shall be substituted for para. 118, part XI :

118. Every aircraft in flight shall have on board its certificate of registration, the certificate of airworthiness, if any, the licenses of all the members of the crew requiring licenses, the authority and license for the equipment and working of the wireless installation, if any, and a journey log book containing the following particulars:-

(n) The category to which the aircraft belongs ; its nationality and registration marks ; the full name, nationality and residence of the owner ; the name of the maker, the description and the carrying capacity of the aircraft .

(b) In addition, for each journey :

(I) A record of all signals and wireless communications and observations concerning navigation ;

(II) The names, nationality and residences of the pilot and of each of the members of the crew ;

(III) The place, date and hour of departure, the route followed, and all incidents of the journey, including alightings .

The following shall be substituted for lines 1 and 2 of para . 111), part X 1 : 119,

There shall also be kept for every commercial aircraft .

The following paragraphs shall be substituted for para . 124, part XI :

124. No aircraft of a Nation with which Canada has not concluded a convention relating to international flying and no foreign military aircraft shall fly over or alight in Canada except with the express written permission of the Minister of National Defence .

(2) No aircraft shall engage in the carriage of persons or goods for hire between places in Canada, or carry out any operation for remuneration or reward over Canadian territory, unless it is registered as a commercial aircraft in Canada or in some other of His Majesty's dominions, colonies or possessions .

(3) In these Regulations references to passengers carried for hire or reward include references to persons carried in aircraft for the purposes of instruction in flying for which payment is made .

The following sub-paragraph shall be inserted after para . 129, part XI :

129 (2) In the case of an aircraft registered in Canada being damaged to such an extent that repairs other than ordinary running repairs or replacements are necessary, the owner or pilot thereof shall notify the Department of National Defence forthwith, giving particulars of such damage .

March 1924 : United Kingdom government creates (incorporates) "Imperial Airways" as a "State Owned Company". Imperial Airways Limited was formed from -

- British Marine Air Navigation Co (three flying boats)
- Daimler Airway (five aircraft)
- Handley Page Transport (three aircraft)
- Instone Air Line (two aircraft).

The board of the new company consisted of:

- Sir Eric Geddes (Chairman).
- Lieut-Colonel Frank Searle. (Managing Director).
- Major Humphrey (Manager).

Government representatives:

- Sir George Beharrell.
- Lieut-Colonel Frank Searle.
- Lieut-Colonel J. Barrett-Lennard.
- Sir Samuel Instone.
- Sir Herbert Hambling.

## Notes on "Civil Aviation"

- Major J. W. Hills

Great Britain had such a scheme, the Imperial Airship Scheme, put forward in 1924 after an extensive political tug-of-war by Ramsay MacDonald's first ever Labour government in Britain. The man behind the "scheme" (Programme) was the new Labour Secretary of State for Air, Lord Thomson of Cardington. The original idea for the "scheme" (Programme) had, in fact, come from proposals put forward in 1922–1923 by an ex-Royal Navy officer, Charles Dennistoun Burney. 1924 "scheme" (Programme) was to include both research programs and the manufacture of two very large rigid airships, the largest in the world at the time. These airships would be the R.100, designed and built by a private company, the Airship Guarantee Company, a subsidiary of Vickers headed by Burney, at Howden; and the R.101, designed and built by the Royal Airship Works, a government concern controlled by the Air Ministry, at Cardington. Two airships R-100 the Capitalist airship." and R-101 the Socialist airship," were identical, the R.100 and the R.101 were significantly different.

chief designer at the Airship Guarantee Company, the now-famous Barnes Wallis chief calculator was none other than Nevil Shute Norway. workmanship on the R.101, as well its general appearance, was clearly superior; unfortunately, the same could not always be said of the materials used. The airship was also full of untried gadgets and ideas. R.101 first flight, on 14 October 1929, proved without a shadow of a doubt that it was both seriously overweight and underpowered. In late June 1930, in order to give still more lift for the long and arduous trip to India, the R.101 went back into a shed at Cardington to be lengthened by almost fourteen metres. This process was only completed in late September 1930. On 16 December 1929, seven weeks after the R.101's first flight, the R.100 was gingerly taken out of its shed at Howden by four hundred soldiers; the first flight was a great success. It very quickly proved its superiority as a flying machine over its rival, the R.101. 100 m<sup>3</sup> of hydrogen can lift a mass of 109 kg. Accommodation for the 100 passengers was on two levels, in 14 two-berth and 18 four-berth cabins, just above the crew's quarters.

The 56-seat dining room, by far the largest room in the ship, was found on the lower level. On either side were cabins and a passageway leading to a balcony promenade from which the passengers could see the view below. The upper level included a gallery overlooking the dining room and, on either side, more blocks of cabins, a passageway and a smaller balcony promenade. A double set of staircases connected the two levels of the passenger coach

1924 : the UK Air Pilot , UK Air Ministry loose-leaf manual of flight regulations.

01 April 1924 : Imperial Airways (IAL) is created thru the merger of Daimler Airway, Handley Page Transport, Instone Air Line and British Marine Air Navigation. Frank Searle is appointed Imperial Airways' Managing Director. Woods Humphery is appointed General Manager. Searle and Woods Humphery raise Daimler Airway's standard of 1,000 hours of paid operations per year per aircraft to 2000 hours a year/aircraft for Imperial Airways and introduce new levels of interior comfort and lavishness to "rival that of the steam and air-ships of the era".

1 April 1924 : Royal Canadian Air Force created pursuant to an Order in Council passed under the authority of the Canadian Air Board Act, effectively reversing the 30 May 1919 Cabinet decision that Canada did not need and could not afford a post-war air force. The Order in Council provides that *discipline would be maintained in accordance with the British Air Force Act*, except where it was inconsistent with the applicable Order in Council. The Royal Canadian Air Force was originally made up of three branches: a Permanent Active Air Force, a Non-permanent Active Air Force and a Reserve Air Force. The original establishment for the RCAF was set at 62 officers and 262 airmen. This early RCAF was unique amongst world air forces as the majority of its work was non-military in nature. It performed the duties that today are often performed by civil agencies: photo-survey, casualty evacuation, air mail delivery, fisheries and border patrol, utility transport for government officials, etc. The RCAF assumed control of the original six stations of the Civil Operations Branch of the Air Board at Camp Borden, Winnipeg, Vancouver, High River (Alta), Ottawa and Dartmouth, and the headquarters was established in Ottawa. By 1927 there was strong opposition to the military performing these civil operations. Therefore, the Directorate of Civil Government Air Operations was created to administer and control all air operations carried out by state aircraft, except for exclusively military operations. DCGAO was supposed to be a civilian organization, but in reality it was commanded, administered and staffed by RCAF personnel who were seconded to or attached to this new directorate. By 1927-28 the RCAF had been reduced to two air stations (Camp Borden and Vancouver) and a headquarters, the other stations being transferred to DCGAO. As money was scarce and DCGAO had assumed most of the flying

## Notes on "Civil Aviation"

operations in Canada, this RCAF organization was essentially a paper force. The RCAF was essentially training personnel for DCGAO. source reference ; DND - RCAF News Article / The Royal Canadian Air Force Journal : "A return to the Royal Canadian Air Force ranks: A historical examination" Lieutenant-Colonel John Alexander, September 26, 2014

1 April 1924 : the *King's Regulations and Orders for the RCAF* come into effect.

King's Regulations and Orders (KR&O) for the RCAF were completed after two years of staff work largely based on the Royal Air Force and the United Kingdom Force Act, the enlisted ranks were adjusted to the following: warrant officer 1st class (WO1), warrant officer 2nd class (WO2), flight sergeant (FS), corporal (Cpl), leading aircraftman (LAC), aircraftman 1st class (AC1) and aircraftman 2nd class (AC2). the titles, "in many instances, originated with the Royal Naval Air Service and later were adopted by the Royal Flying Corps, which in turn became the RAF in 1918 - Deputy Chief of Personnel memorandum to the RCAF Senior Advisory Group, February 1965. source reference ; DND - RCAF News Article "A return to the Royal Canadian Air Force ranks: A historical examination" Lieutenant-Colonel John Alexander, September 26, 2014

No significant changes were made to officer ranks with the exception of adding air marshal and air chief marshal. Canada automatically adopted the Royal Air Force ranks for use in the RCAF when it based the RCAF KR&O upon the Royal Air Force KR&O and the United Kingdom Force Act. These ranks would remain in effect in the RCAF until unification in 1968. Principal among the arguments was that the ranks in use by the RCAF were no longer indicative of the officer's function as it was 40 years previously when the ranks were created. Other arguments included the lack of one-word ranks, thus leading to confusion among the public.

RCAF ranks also did not easily translate into French whereas the Canadian Army ranks did. Lastly, in 1965 it was considered advantageous to adopt the Canadian Army rank structure as it was similar to the rank structures used by the other members of the United Nations and the North Atlantic Treaty Organization with whom the RCAF could be expected work alongside on operations. The recommendation of this report was to retain the rank insignia but adopt the Canadian Army rank titles as this result would be "the best of both choices."

Prior to unification in 1968, the Canadian Army and the RCN had developed aviation and air arms of their own, which did not belong to the RCAF. source reference ; DND - RCAF News Article "A return to the Royal Canadian Air Force ranks: A historical examination" Lieutenant-Colonel John Alexander, September 26, 2014

The RCAF staff of 1924:

- a) Permanent Active Air Force : 62 officers (similar to today's Regular Force)
- b) Non-Permanent Active Air Force : 4 officers (similar to the Reserve Force)
- c) Non-commissioned members : 262.

In 1932, after seeing gradual growth, the RCAF was slashed by one-fifth, releasing 78 officers and 100 airmen because of the world wide depression at the time. This left the total strength at 103 officers and 591 airmen. For three years the RCAF was barely able to survive, but in 1935 the situation began to gradually improve. This time period also heralded a major change to the concept of operations. For years the RCAF had been engrossed in civil aviation; now it was about to become a military air force.

03 April 1924 : FLIGHT - NICKNAMED at its inception the " Million Pound Monopoly Company," and referred to in the agreement made by the Air Ministry with the British, Foreign, and Colonial Corporation, Ltd., as the Imperial Air Transport Co., Ltd., the new combine which took over, on Tuesday of this week, the services hitherto operated by four separate companies will be known, in future, as Imperial Airways, Ltd. This is certainly a less cumbersome imperial title suggested in the agreement, and, doubtless, the company will speedily adopt and be known by the initial letters " I.A.L."

Incidentally, it may be noted that, by coincidence or otherwise, these letters are the same as the initial letters of the Instone Air Line.

The new company, it may be recalled, has been formed with a capital of £1,000,000, while the Government is committed to another million spread over ten years, the new company is now a fait accompli, with the following board of Directors:—

Sir Eric Geddes (Chairman), Lord Invernairn, Sir George Beharrell, Sir Herbert Hambling and Major J. W. Hills (representing the Air Ministry), Colonel F. Searle (Managing Director), Colonel Barrett-Lennard, Sir Samuel Instone, and Mr. Hubert Scott-Paine. presumably the first three gentlemen represent the financial side, Sir Herbert Hambling (whose committee advocated the formation of the company) and Major Hills are to look after the Air Ministry's interests, the former probably on the financial and the latter on the technical and operational side. The four last named, of course, represent the four absorbed companies—Daimler Airways,



## Notes on "Civil Aviation"

Handley Page, Ltd., the Instone Air Line, and the British Marine Air Navigation Co., Ltd., respectively. It will be noted that no constructional firm is represented on the board of directors. It is laid down that the new company is not to undertake the manufacture of machines or engines, except with the consent of the President of the Air Council.

Sir Samuel Instone praised Col. Bristow, of Messrs. Ogilvie and Partners, who had been the guiding spirit of their technical staff; and to Major Greer and Mr. Eskill on the commercial side. Major Greer (general manager - Instone Air Line) said that the principle laid

down by the Instone Air Line was that safety should come before everything. In his opinion, the status of commercial pilots was bound to rise, rather than fall, as longer routes were operated and faster machines became available. Greater skill would be required, and he thought the Directors were right in regarding pilots not as aerial chauffeurs,<sup>1</sup> but as officers holding high responsibility.

### IN PARLIAMENT - Air Ministry and Ex-Service Men

LIEUT.-COL. MOORE-BRABAZON on March 28 asked the Under-Secretary of State for Air what are the names and categories of all ex-Service men dismissed from the Department of Civil Aviation or transferred from that department to other sections of the Ministry within the last 12 months; and why such officers were dispensed with while an officer with practically no ex-Service qualifications is still retained? Mr. Leach: In answer to the first part of the question, the appointments of Brigadier-General Festing, Controller of Aerodromes and Licensing, and Lieut.-Commander Bernard, Senior Assistant, were terminated on abolition of their posts, and no other suitable appointments could be offered to them; Mr. Ransom, Junior Assistant, was transferred on reduction of Civil Aviation establishment to the educational staff; and Mr. Lilley, Junior Assistant, whose appointment in the same directorate was terminated on reorganisation, has been offered a post in the Aeronautical Inspection Department. As regards the second part of the question, the officer referred to is filling a post for which he was considered to be more suitable than three of the officers named above, while the fourth (General Festing) could hardly be regarded as a candidate for it.

Lieut.-Colonel Moore-Brabazon asked the Under-Secretary of State for Air (1) whether, in view of the fact that competent ex-Service men at present in the directorate of contracts are not to be discharged from the Air Ministry, he will give an undertaking as to the minimum length of time that such men shall be retained, in order that they may not work under the constant anxiety of knowing that they may be discharged at any moment to make room for the promotion of permanent civil servants; (2) whether it is his intention to replace the ex-Service men who have been employed in the engine and supply sections since the inception of the Air Ministry by non-technical permanent civil servants; and whether, in view of the undesirability of transferring such important work as the purchase of technical equipment for the whole of the Air Force to non-technical non-flying permanent civil servants, and of the hardship involved in discharging ex-Service men who have devoted 10 years of their lives to Army and Government service, he will find some other way by which avenues of promotion can be opened to permanent civil servants already in employment.

Mr. Leach: As regards the first question, I regret that I am unable to give the undertaking suggested, which would be contrary to the policy of the public service in regard to unestablished staff. As regards the second question, I would refer the hon. and gallant member to my reply to Mr. Hogge on March 6.

### 03 April 1924 : FLIGHT - A New Canadian Aerodynamics Laboratory

A NEW aerodynamic laboratory, including a 4-ft. wind channel, has just recently been opened at the Toronto University. Hitherto the laboratory had been installed in the Mechanical Building of the University, but last year, owing to necessary expansions in other directions, it was found to be impossible to continue the wind channel work in this building. The Department of National Defence, recognising the importance of maintaining the laboratory, granted to the University five thousand dollars towards the erection of a new building, the additional cost being borne by the University.



## 03 April 1924 : FLIGHT : ROYAL AERONAUTICAL SOCIETY Official Notices Lecture.—The next lecture will take place

at 5.30 p.m. on April 3, at the Royal Society of Arts, when Colonel the Master of Sempill, A.F.C., Associate Fellow, will read a paper on "The British Aviation Mission to the Imperial Japanese Navy." Wilbur Wright Lecture.—Lieut.-Col. H. T. Tizard, A.F.C., Fellow, has accepted the Council's invitation to deliver the Wilbur Wright Memorial Lecture, which will take place at 8.30 p.m., on May 29, at the Royal Society of Arts, the subject being "Fuel Economy in Flight." This will be the twelfth lecture delivered in memory of Wilbur Wright, who died on May 30, 1912. under the auspices of the Society and the Trustees of the Wilbur Wright Memorial Lecture Fund. The full list of previous lectures is as follows :—

- 1913 : Sir Horace Darwin, F.R.S. : "Scientific Instruments : Their Design and Use in Aeronautics."
- 1914 : Sir R. T. Glazebrook, F.R.S. : "The Development of the Aeroplane."
- 1915 : Professor G. H. Bryan, F.R.S. : "The Rigid Dynamics of Circling Flight."
- 1916 : Mr. Griffith Brewer : "The Life and Work of Wilbur Wright."
- 1917 : Lieut.-Col. M. O'Gorman, C.B. : "Looking Ahead."
- 1918 : Dr. W. F. Durand : "Some Outstanding Problems in Aeronautics."
- 1919 : Prof. L. Bairstow, F.R.S. : "Progress of Aviation in the War Period."
- 1920 : Commander J. C. Hunsaker, U.S.N. : "Naval Architecture in Aeronautics."
- 1921 : Mr. G. I. Taylor, F.R.S. : "Scientific Methods in Aeronautics."
- 1922 : Lieut.-Col. A. Ogilvie, C.B.E. : "Some Aspects of Aeronautical Research."
- 1923 : Prof. J. S. Ames : "The Relation between Aeronautic Research and Aircraft Design."

RAeS Associate Fellowship Qualifications. 03 April 1924 : In view of misapprehensions which appear to exist as to the necessity for taking the Society's examination for Associate Fellowship, attention is drawn to Clause IX of the Regulations, which read as follows:—

### "IX.—EXEMPTIONS"

From the whole of the Examination : Any of the following qualifications will exempt a candidate from the whole of the examination :

- a) Any engineering degree, with advanced mathematics, of any University in the United Kingdom or in the British Dominions overseas. BUT - If the degree be without advanced mathematics, a further qualification of equivalent value will be required, or the candidate be required to take the Mathematics Section of the Examination of the Society.
- b) A diploma in aeronautics obtained at the Imperial College of Science and Technology, or
- c) A Cambridge University College B.A. in aeronautics.
- d) The Whitworth Scholarships.
- e) *The engineering diplomas of the Imperial College of Science and Technology, and of other Schools of Technology under the conditions relating to (a).*

### **From Part I.**

- a) Matriculation [Graduation] at a University or equivalent examination ;
- b) a science degree from any university of the United Kingdom or the British Dominions ; or
- c) having obtained a Whitworth Exhibition ; or
- d) having passed into R.N. College, Osborne ; R.N.E. College, R.M.A., R.M.C., or R.A.F. College, Cranwell.

Other forms of Exemptions:

The Royal Aeronautical Society Council will consider, on its merits, any other:

- 1- degree,
- 2 - diploma or

## Notes on "Civil Aviation"

3 - certificate of equivalent standing to those enumerated above which may have been obtained by a candidate *from any University or College in the United Kingdom or abroad.*"  
per W. LOCKWOOD MARSH, Secretary RAeS.

On 1 November 1936 the Department of Transport was created, and this relieved the burden of civil aviation from the RCAF. The RCAF returned to many of the air stations that had been civil in nature for so many years and formed military type squadrons (bomber, fighter and torpedo). In addition, RCAF Station Trenton, Ontario, was constructed at this time. As the RCAF saw real expansion, it was realized that the infrastructure to control this vast organization was stretched to its limit and it was time to decentralize. Four new regional commands were set up to report to RCAF HQ in Ottawa. These new commands were: Eastern Air Command in Halifax, Nova Scotia, with operational command of all units in Nova Scotia, Prince Edward Island, and New Brunswick (Newfoundland was still a British colony at the time)

Central Air Command in Winnipeg, Manitoba, with operational command of all units in Manitoba, Saskatchewan, and northern Ontario

Western Air Command in Vancouver, British Columbia, with operational command of units in British Columbia, and Alberta, and

Air Training Command in Toronto, Ontario, with control of all basic aircrew and groundcrew training and responsibility for Camp Borden and Trenton

RCAF HQ in Ottawa exercised command over all units in Ontario (except the north west) and Quebec. With the growing concern over a conflict in Europe, funding now became available for expansion and as a result of its reorganization, the RCAF was fairly well prepared for the coming war.

24 April 1924 : Fokker F.III "H-NABS" operated by KLM departs Lympe for Rotterdam and Amsterdam and is never heard of again, presumed to have crashed into the sea killing the pilot and both passengers.

1924 : the "Air Service" (RCAF) is almost fully occupied with Canadian government "civil flying" operations.

1924 : Jericho, BC - first Royal Canadian Air Force Base in BC, Jericho Beach Flying Boat Station

1924 : Wop May and Harry Adair form "Edmonton Grande Prairie Aircraft Company" using Curtiss "Jenny"

1924: RCAF discontinues flying services that could be provided by private companies. Government of Ontario forms Ontario Provincial Air Service (OPAS) with 13 Curtiss HS-2L flying boats (G-CAOR, G-CAOJ, G-CAO?, )

07 April 1924 : Canada - Inst. of Canadian Engineers : Ottawa Branch : A graphic description of the progress of the airplane and other forms of air mastery by man was given in a lecture before the Ottawa Branch, in the Victoria Museum on the evening of April 7th, by Wing Commander E. W. Stedman, O.B.E, M.E.I.C, late of the technical staff of the Royal Naval Air Service, afterwards technical director of the Handley Page Company, and now with the Air Board, (R.C.A.F.).<sup>196</sup>

July 1924, Henlow is selected as the permanent home of the School of Aeronautical Engineering 197. Although variously

renamed, this course functioned almost to the 1970s. In those days, students of the Officers' Engineering Course, who were nearly all ex-wartime pilots, spent two years learning basic engineering theory and the management of workshops. Squadron Leader Bailey and his staff of four were founding the forerunner of the RAF Technical College. Outstanding students on the course were sent to Cambridge University to read for a degree. In 1935, the Home Aircraft Depot, at Henlow was transferred to Technical Training Command. However, Henlow's dual role remained the same: training skilled engineers, and equipping operational squadrons with the latest aircraft. In 1938 an Air Ministry directive outlining policy for the training of a number of direct entrant officers who had varying degrees of engineering experience in civil life "to be initiated into the general demeanour, bearing, and duties of RAF Officers...." during WW2 To meet ever increasing demands, and the requirement to train more RAF technicians in the art of aircraft repair, the old Training Wing was reorganised and renamed No 14 School of Technical Training. The role of the RAF School of Aeronautical Engineering remained similar to that which it carried out pre-war, but officers transferred from other branches were soon outnumbered by commissioned civilians and from ex-airmen

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<sup>196</sup> F. C. C. Lynch, A.M.E.I.C article "Progress in Aviation" - The Engineering Journal - Transactions of the Engineering Institute of Canada - May 1924 pg 262

<sup>197</sup> Royal Air Force Henlow at 90, The First 50 Years 1917-2007 Jim Lawn • Andrew Whiteside • James Lawrence • Ian Howkins-Griffiths - Copyright 2002. Published with the permission of the Station Commander Royal Air Force Henlow.

## Notes on "Civil Aviation"

commissioned for the duration of the war. Training of technical officers continued throughout the war but the course was reduced in both content and depth. 1961 the Secretary of State for Air announced the merger of the RAF Technical College and the RAF College at Cranwell in order to bring together the two main branches of the RAF, the flying and technical branches, so that the

officers of each would clearly understand the responsibilities

of the other. - see also Air Publication 938: Regulations for the Royal Air Force Reserve, Including the Reserve of the Air Force Officers and Men of the Royal Air Force Reserve, 1923

24 December 1924 : Imperial Airways DH.34 G-EBBX crashes and catches fire shortly after take-off from Croydon, killing the pilot and all seven passengers<sup>198</sup>.

October 1924 : RAF strength is 43 Sqns (A Century of Triumph: The History of Aviation, pg 100 By Christopher Chan)

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<sup>198</sup> Flight and the Aircraft Engineer - January 1925, pg 4

**1924 - BRITISH EMPIRE - THE KING'S ENGINEERS - THE ROYAL ARMY'S ENGINEER SERVICE**



The corps of Royal Engineers demands attention ; but it is by no means easy to bring the work of the sappers within the scope of this volume, as, in addition to their purely military duty, it is difficult to name a civilian job, from wireless telegraphy to the making of a window-sash, which is not handled by men of the corps. But sapping and mining, entrenching and escalading, bridging and pontooning, are more the kind of thing the public associates with the Royal Engineers. Subterranean warfare is so ancient that it was well understood and often practised centuries before the introduction of gunpowder. A favourite method was to undermine a wall or bastion, and replace the earth with wooden props, which were destroyed by burning when the mine was "fired," thus bringing the unsupported masonry tumbling down by its own weight. an officer of Royal Engineers stationed in India invented the "Bangalore torpedo. Bridge-building is quite a Royal Engineer speciality. Marines attacked a modern trench, and this brings us to another phase of Royal Engineer work. To bombard that trench effectively a gunner officer would have to arrange for frontal fire, enfilade fire, and oblique fire, at one and the same time, and even then he would find his "scheme" (Programme)spoilt by ingenious arrangements within the trench designed on purpose to localize the effect of a shell bursting among the defenders.

the Royal Engineers, it must be pointed out that the Corps controls the nerve centres of the Army, those wonderful field telegraphs, telephones, and wireless which keep a

## Notes on "Civil Aviation"

General in constant touch with troops scattered as only the requirements of modern war can distribute men.

intrepid airmen follow the sappers as a matter of course, as the Royal Flying Corps is a direct offshoot of the Royal Engineers. This branch of the Service has proved to be of such value in the field that an army does its best to get out of sight of the "bird-man."

(Source Ref : THE BRITISH ARMY BY W. G. CLIFFORD)

The following schools are maintained by the Government of GREAT BRITAIN:

Royal Staff College, for the education of general staff officers ;

Royal Military Academy ;

Royal Military College ;

Ordnance College ;

Cavalry School ;

Camel Corps School ;

School of Gunnery ;

School of Military

Engineering;

Central Flying School;

School of Musketry; Schools of Electric Lighting;

Army Signal School;

A. S. C. training establishment;

Royal Army War College ;

Army Veterinary School ;

Royal Military School of Music;

Duke of York's Royal Military School;

Queen Victoria School

### METHODS OF ENTERING THE REGULAR ARMY ROYAL MILITARY COLLEGE, SANDHURST.

Methods of entry. There are two methods of obtaining admission to the Royal Military College :

1. By successful competition at an army entrance examination.

(a) The following enter without competition, provided they qualify in the obligatory subjects at an army entrance examination: King's Cadets; Honorary King's Cadets (10 annually) ; King's Indian Cadets (20 annually) ; Honorary King's Indian Cadets (3 annually) ; Pages of Honor.

2. On the nomination of the army council.

General qualification. Candidates must be unmarried, and will not be accepted unless, in the opinion of the army council, in every way suitable to hold a commission.

All successful and nominated candidates must pass a medical examination.

Age. Candidates must have attained the age of 17 and must not have attained the age of 19 ^ (the half year being reckoned by calendar

## Notes on "Civil Aviation"

months) on the 1st of June and 1st of December, respectively, for admission to the college at the commencement of the ensuing spring

and autumn terms.

Candidates of the West India Regiment may compete if under 21 years of age on the above dates.

### ARMY ENTRANCE EXAMINATION.

General outline of the army entrance examination. The army entrance examination is both qualifying and competitive, i. e., a candidate to be considered successful must obtain a qualifying minimum of marks in certain obligatory subjects and must, in addition, gain a sufficiently high place on the list to entitle him to one of the cadetships offered.

Certificates required. The candidate, when called upon to do so, will be required to furnish the following :

1. An extract from the register of his birth; or, if this can not be obtained, a certificate of his baptism, or other documentary evidence accompanied by a statutory declaration made by one of his parents or guardians before a magistrate, giving the exact date of birth.
2. If the candidate holds a commission in the special reserve of officers, militia, or territorial force, a recommendation from the commanding officer of the regiment.
3. On Form A the names of two responsible referees (not tutors, relatives, or near connections), who having known him during the four years previous to the examination will furnish a certificate as to character.

Subjects :

Class I

Obligatory

English.

English history and geography.

Mathematics A (elementary).

French or German.

Class II

Optional

German or French.

Latin.

Greek.

Science (physics and chemistry).

Mathematics B (intermediate).

Mathematics C (higher).

All subjects in Class I must be taken up, and a qualifying minimum of 33 per cent of the maximum marks must be obtained in each.

Only two of the subjects in Class II may be taken up, and if one of these is a modern language it must be different to the modern language selected in Class I.

In addition, free-hand drawing, to which 400 marks are allotted, may be taken up.

Certificate A, obtained in a unit of the officers' training corps, will entitle the holder to receive 200 marks.

### NOMINATION TO CADETSHIP BY THE ARMY COUNCIL.

Conditions. A certain number of suitable candidates, recommended by the headmasters of schools recognized for the purpose, are nominated to cadetships by the army council each half year.

To be eligible to recommendation by the headmaster a candidate must

1. Have attended continuously for at least three years one or more approved schools and remain in residence at the school until the end of the term immediately preceding the nomination.
2. Be within the prescribed limits of age.
3. Be an efficient member of the school contingent of the officers' training corps.

#### PRIZE CADETSHIPS.

A certain number of prize cadetships are awarded to successful competitors (other than candidates for commissions in the West India Regiment) in order of merit at each half-yearly army entrance examination. Emoluments varying in value up to a maximum of 255 may be attached to a prize cadetship.

#### ROYAL MILITARY ACADEMY, WOOLWICH.

Method of entry. Admission to the Royal Military Academy can only be gained by successful competition at an army entrance examination.

General qualifications. Candidates must be unmarried, and will not be accepted unless, in the opinion of the army council, in every way suitable to hold a commission.

All successful candidates must pass a medical examination.

Age. Candidates must have attained the age of 16½, and must not have attained the age of 19 (the half year being reckoned by calendar months) on the 1st of June for the summer and on the 1st of December for the winter army entrance examination.

#### ARMY ENTRANCE EXAMINATION.

General outline of army entrance examination. Same as for the Royal Military College.

Certificates required. Same as for the Royal Military College.

Subjects :

Class I Obligatory

English.

English history and geography.

Mathematics, A (elementary).

French or German.

Science (physics and chemistry).

Mathematics, B (intermediate).

Class II

Optional

German, French, Latin, or Greek.

Mathematics, C (higher).

All subjects in Class I must be taken up. Only one of the subjects in Class II may be taken up, and if it is a modern language it must be different to the modern language selected in Class I.

In addition, free-hand drawing, to which 400 marks are allotted, may be taken up.

Certificate A, obtained in the officers' training corps, will entitle the holder to receive 200 marks.

A candidate may, if eligible in respect to age, compete for both Royal Military Academy and Royal Military College at the same examination by taking up the subjects which are obligatory for the Royal Military Academy.

Medical examination. Same as for the Royal Military College.

Prize cadetships. A certain number of prize cadetships are awarded to successful competitors in order of merit at each half-yearly army entrance examination. Emoluments varying in value

## Notes on "Civil Aviation"

up to a maximum of 255 may be attached to a prize cadetship.

### ROYAL MILITARY COLLEGE, KINGSTON, CANADA.

General qualifications.

The college has a wider scope than the English military colleges, as, besides military subjects, it teaches civil engineering, surveying, etc.

Seven commissions in His Majesty's Regular Army are granted annually to the students:

Royal Engineers x1 ;  
Royal Artillery, x1 ;  
Cavalry, x1 ;  
Infantry, x1 ;  
Indian Army, x1 ;  
Army Service Corps x2.

Candidates must be British subjects, and they or their parents must have resided in Canada for two years immediately preceding the examination; short periods of absence in Europe for purposes of education to be included as residence.

Age. Between 16 and 20 on January 1st, preceding the examination.

General outline of tests which must be passed. Admission by competitive examination COMPETITIVE EXAMINATION.

Papers and certificates required with application.

- (1) Certified abstract from birth register in duplicate, or if not procurable, a declaration made before a magistrate;
- (2) a certificate of good character.

Subjects studied.

- (1) Mathematics;
- (2) grammar and composition, English or French;
- (3) geography;
- (4) history, British and Canadian;
- (5) French;
- (6) Latin;
- (7) geometrical drawing;
- (8) chemistry;
- (9) free-hand drawing.

Medical examination : The candidate must be medically examined before admission to the competitive examination.

### MILITARY FORCES OF THE SELF-GOVERNING DOMINIONS AND CROWN COLONIES.

General qualifications. A certain number of commissions are granted each half year to candidates from the self-governing dominions and Crown Colonies.

Candidates who fulfill the following conditions may be nominated by the governor general of a dominion or by the secretary of state for the colonies in the case of Crown Colonies. A candidate must:

- (a) Be unmarried.
- (5) Have attained the age of 20 and not have attained the age of 25 on April 1st if nominated in January, or on October 1st if nominated in July.
- (c) Have qualified at any army entrance examination, or have passed one of the examinations accepted in lieu thereof.
- (d) Have served as an officer in the local forces of the dominion or colony from which he is nominated, and have attended two annual trainings (each in a distinct year), or have seen active service in the field. A candidate for a commission in the Royal Artillery must be an officer of the artillery.
- (e) Have been attached to a British regular unit or to a unit of the permanent military force of the dominion or colony for two consecutive months at any time after the completion of his first training, and have obtained a satisfactory report.

### ARMY ENTRANCE EXAMINATION.

To whom to apply and date of application. A candidate must apply to his commanding officer at such date as will allow of the application reaching the war office not later than April 1st or September 1st for a June or November examination, respectively. Subjects. Same as for candidates from the special reserve, militia, or territorial force.



## Notes on "Civil Aviation"

General qualifications. A candidate for a commission from the ranks:

- (1) Must be specially recommended by his commanding officer;
- (2) must not be of lower rank than corporal;
- (3) must have two years' service;
- (4) must have a first-class certificate of education;
- (5) must have a clear regimental conduct sheet;
- (6) must be unmarried. Age. Must be under 26 years of age.

Medical examination. A certificate from a medical officer as to fitness for service, at home and abroad must be attached to the recommendation of the commanding officer.

General outline of tests which must be passed.

After the candidate's name has been approved by the Secretary of State he must pass in subject (a) as laid down in the King's Regulations.

He is then duly gazetted, and granted an outfit allowance.

(Source Ref : IE RECRUITMENT OF OFFICERS IN TIME OF PEACE IN THE PRINCIPAL ARMIES OF EUROPE - US ARMY WAR COLLEGE : WASHINGTON NOVEMBER, 1915)

### "SAPPER" RECRUITS - 1869

are enlisted from the age of eighteen to twenty-five years:

1st. By External Measurement ^ that is, they must be in height five feet six inches and upwards (one inch higher than is required for the line), and from thirty-three to thirty-five inches (according to their height ^s above the standard) round their chests.

2nd. By Internal Measurement, namely, they must be men of good character, able to read and write ; and lastly, by actual trial in the trades to which they profess to have been brought up or apprenticed, their qualifications must be scrupulously and accurately tested.

The attraction of intelligent recruits to the Corps of Royal Engineers, is precisely that which attracts to the London police, to the Irish constabulary, and indeed to all trades and professions, men of superior attainments,—namely, liberal remuneration, as follows:

a - In addition to their regular military pay, noncommissioned officers and sappers receive working pay according to their classification as workmen or artificers, for those days on which they are actually employed on the public works.

This classification depends on their skill and attention, and they are raised from one Rate to another, on the recommendations of the Captains.

### HALLS OF STUDY FOR Engineer OFFICERS.

Each newly-appointed officer while at the Royal Engineer Establishment is required to go through six distinct courses, for which the following periods are allotted.

Courses and duration in Months.

1. Drill and military duties . . . . . 3
2. Survey course . . . . . 6
3. Field-works and military bridges . . . 4
4. Architectural course . . . . . 0
5. Chemistry . . . , . . . . . 0
6. Telegraphy and submarine mining . . 1

Total months education in this course, exclusive of leave . . . . 21

The working hours of the Corps, as fixed by the Engineer Code, are as follows :—

From 1st March to 30th September, 9h. 50m

From 1st October to 31st October, 0h. 0m.

From 1st November to 30th November, 8h. 0m.

## Notes on "Civil Aviation"

From 1st December to 12th January, 7h. 15m.  
From 13th January to 13th February, 8h. Om.  
From 14th February to 28th February 9h. Om.

The time allowed to the men for dinner is one hour, viz., from 12 to 1 o'clock throughout the year.  
Before leaving the establishment each officer is examined:  
1st, in his military duties, as already stated, by a Board of Field Officers, no one of them an Engineer, and,  
2ndly, in writing, in the six different courses he has studied.

The written examination paper of each officer, after due consideration, is then forwarded to H.R.H. Commanding-in-Chief, by the Director, with a confidential report describing his general qualifications, and also stating—as a useful practical record—whether he has shown particular aptitude for any special branch of his profession.

Young officers, although gifted with temporary commissions, are not permanently gazetted to the Corps until they have completed their course of instruction at the Royal Engineer Establishment; and accordingly, if through indolence they exceed the time allotted, their permanent commissions may at the discretion of the Commander-in-Chief be antedated to a date subsequent to that upon which they were gazetted to temporary rank.

By this act they would lose the intermediate service, and with it, possibly, one or more steps in their Corps which, as the promotion is by seniority, would be, literally speaking, a life-long punishment.

All Officers of Engineers are required to go through the "Course of Instruction for Officers in General AND Special Surveying, Reconnaissance, Astronomy, Demolition, Survey for Determining Lines of Communication by Roads, Railways, and Canals" for which six months, or 156 working days, are allowed.

As the young officers advance in the different branches of military science, in which they are here instructed, in order to test their progress, they are required to compose plans and designs, with a report in writing thereon of various descriptions.

In reconnaissance the young officers (who at the Royal Military Academy had been well grounded in the preliminary principles of sketching) are here required to make a reconnaissance or military sketch on a scale of six inches to a mile, founded upon a base and system of triangulation, showing the position of towns, villages, churches, detached houses of importance, roads, streams, fords, bridges, &c., accompanied by a report in writing describing among other details whether the surrounding country is closely intersected with fences, and favourable or the contrary to the movement of the troops of an army. Whether with respect to any road included in their sketches there is any point where communication by it could be easily destroyed, either permanently, or by hasty demolition. What number of troops or horses could be sheltered at a given position on an emergency, or for continuance, and the number and description of carriages and carts that could be provided. Whether the country is well adapted for defence, especially noting any position that is capable of being rendered defensible speedily—whether each town or village in the sketch is close, open, surrounded by walled gardens, or other buildings which could readily be made defensible.

Whether there is any ground suitable for an encampment, either for a permanent, or for troops on the march, or any spot particularly adapted for a defensive position.

Which of the roads designated on the plan are capable of bearing continuous heavy traffic, and what means are at hand for their repair. Whether

the information reported has been obtained from the officer's personal observation, or derived only from report.

Lastly, all proper names are required to be in italics, in characters sufficiently large to be easily legible to a man on horseback.

It is unjust to the subaltern of the Hne, and unnecessary to the subaltern of Engineers to institute between them an invidious comparison which really should be made not between two individuals possibly brothers, but between two antagonistic national systems—the one scientific, the other unscientific. Under the one system, the mind not only of the young officer, but the minds of all his noncommissioned officers and men, are 1st, instructed in all sorts of mechanical contrivances, and 2ndly, are required and encouraged to execute for the benefit of the army all descriptions of work, in all weathers, and under all circumstances, with their own hands.

The other system I at present decline to describe. The inevitable result of the one system is that the subaltern of a single section of Royal Engineer Train A or B Troop is in fact a young general, having under him in his non-commissioned officers, and even in his men, an intelligent, well-educated staff, thoroughly competent to execute scientifically, either in his presence or in lonely detached localities, his orders and his wishes. Under this reasonable system, the sapper, laying aside his theodolite, throws off his coat, and (in obedience to orders) readily helps the driver to clean his horses and harness. In like manner, the drivers of the four leading horses of Pontoon A Troop, and also of those of B Troop, at the word of command, unhook, and having, purposely, breeched to their harness, and a joint in their long traces, at once harness themselves to carts.

Again, drivers, non-commissioned officers—several decorated—and even trumpeters, without prejudice, hook on their lassos, and for the benefit of the service work together the instant they are required, as drivers..

The Engineer-in-Chief.

The Engineer-in-Chief (the head of the Corps of Royal Engineers is directly responsible to His Excellency the Commander-in-Chief.

The Engineer-in-Chief is not a Staff Officer, but the technical adviser of the Commander-in-Chief on all military engineering matters,

## Notes on "Civil Aviation"

responsible for:

- (1) Engineer operations and engineer services during war and peace.
- (2) The preparedness for war of the engineering services.
- (3) The supply of engineer stores during war and peace.
- (4) The execution and maintenance of all military works.
- (5) The constructional efficiency, accuracy and economy of all projects and designs submitted by him.

subaltern - an officer in the British army below the rank of captain, especially a second lieutenant. term for a junior officer. Literally meaning "subordinate", subaltern is used to describe commissioned officers below the rank of captain. can also mean "someone who has been marginalized or oppressed"

A commission as second lieutenant in the Royal Engineers may be given:-

To a cadet who has passed through a course of instruction at the Royal Military Academy, Woolwich, or to a cadet of the Royal Military College, Kingston, Canada.

To a warrant officer or noncommissioned officer.

A commission as second lieutenant in the army service corps may be given:-

To a qualified officer of the regular army, of the royal marines, with not less than one year's commissioned service.

To a cadet who has passed through a course of instruction at the Royal Military College, Sandhurst, or to a cadet of the Royal Military College, Kingston, Canada.

To an officer of the special reserve of officers, militia, or territorial force.

To an officer of the local military forces of the colonies.

To a candidate from a university.

By open competition.

To a warrant officer or noncommissioned officer.

Before final appointment to the army reserve corps, all candidates shall be required to pass a probationary period of one year from the date of joining. When it is desirable in the interests of the service, the probationary period may be terminated earlier.

A commission as lieutenant on the list of district officers of the Royal Artillery, or in the coast battalion of the Royal Engineers, may be given to a quartermaster or a ridingmaster, or to a warrant officer or noncommissioned officer of the Royal Artillery or Royal Engineers, not over 40 years of age. The above limit of age may be extended in a case of promotion for service in the field.

General qualifications. To be eligible to attend a competitive examination, a candidate must fulfill the following conditions:

(a) He must be unmarried, and will not be accepted unless, in the opinion of the army council, he is in all respects suitable to hold a commission in the regular army.

(b) He must attain the age of 20 and not attain the age of 25 on the 1st of April for a March examination, or on the 1st of October for an examination in that month.

(c) He must have qualified at an army entrance examination or passed some other examination accepted in lieu thereof.

(d) He must serve for 18 months in the branch of the service to which he belongs.

NOTE. Certificates A and B obtained in the officers' training corps entitle a candidate to reductions in the period of total service and attachment mentioned above.

An officer of the special reserve of officers must have completed his probationary training and been confirmed in his appointment.

before leaving the establishment, every officer is examined in his military duties (exactly as if he held a commission in the line.

All Officers

on first joining the Royal Engineer establishment at Chatham, are to be placed under the orders of the Field Officer for Military Discipline

year- long apprenticeship of sorts permitted the new officer to learn and practice leadership,

b) The Organisation.

The Engineer organisation of the Army consists of two main branches,

- 1) the " Sappers and Miners " and " Pioneers " and
- 2) the Military Engineer Services.

The personnel of the Corps consists of

Royal Engineer officers,  
officers holding commission,  
a certain number of non-commissioned officers,  
and other ranks.

Field Troops are mounted units, trained to accompany cavalry, and are equipped to carry out hasty work.

Field companies are trained to accompany infantry.

Divisional headquarters' companies are small units containing highly qualified " tradesmen " and are trained to carry out technical work in connection with field workshops.

Typical Squadron Establishment.

The establishment of officers in a squadron consists of six officers in the headquarters and fifteen officers allotted to flying duties. This allows a reserve of one officer for each of the operative flights.

(h) The Aircraft Depot.

The Aircraft Depot may conveniently be described as the wholesale store and provision department of the Royal Air Force. Technical stores from the United Kingdom are received and, in the first instance, held in the Aircraft Depot. It is also the main workshop and repair shop of the Force, where all engine repairs, mechanical transport repairs, and aircraft repairs of any magnitude are carried out.

The Aircraft Park.

Relatively to the Aircraft Depot, the Aircraft Park may be described as a central retail establishment, intermediate between the squadrons and the Aircraft Depot. It receives stores from the depot and distributes them to the squadron. The stocks held in the park are, usually limited to items necessary at short notice for operations, and the quantities held are kept as low as distance from the depot and local conditions will admit. In war, the Aircraft Park is intended to be a mobile formation. In peace, the Aircraft Park is located at Lahore. New aeroplanes, received from the United Kingdom, are erected there, but no major repairs are undertaken.

## Notes on "Civil Aviation"

Composition of Establishments.

The personnel of the Royal Air Force consist of officers, non-commissioned officers and airmen, and artificers and mechanics belonging to the technical section.

The officers of the Royal Air Force are employed on: administrative, flying and technical duties;

All Officers of the Royal Air Force are required to be capable of flying an aeroplane.

The personnel of the technical section are employed entirely at the Depot and Park on technical trades, and consist of carpenters, fitters, fabric workers, instrument repairers, machinists, etc.

24 December 1924 : Imperial Airways de Havilland DH.34 "G-EBBX" operating a scheduled international flight to Paris, France was flying low over Purley, Surrey, United Kingdom before nosediving to the ground and overturning, followed by an explosion and fire which killed all eight people on board. Imperial Airways first fatal accident, it led to the first public inquiry into a civil aviation accident in the United Kingdom under the Air Navigation (Investigation of Accidents) Act, 1920, as amended.

1926 : US Department of Commerce - Aeronautics Branch is established. comprised of existing offices already engaged in aviation activities, was formed to oversee the implementation of the new law. Nine district offices of the Regulatory Division of the Aeronautics Branch were established to conduct inspections and checks of aircraft, pilots, mechanics, and facilities. They share licensing and certification responsibilities with the Washington, DC office<sup>199</sup>

Aviation Week 1925-06-29 VOL. XVIII. NO. 26 1925  
Civil Aviation in Canada

Canadian Report on Civil Aviation Shows that Aircraft Are Used Very Extensively

The Department of National Defence of the Dominion of Canada puts out each year a report on Civil Aviation and also on the civil operations of the Royal Canadian Air Force.

Those who get out this report are certainly to be congratulated. The contents gives a very complete birdseye view of what has been going on in the Dominion and the text is well illustrated with pictures and maps. The report for 1924 starts with a general introduction on the various phases through which aviation in general has passed, it then gives a summary of the year's progress abroad and at home. There is a brief sketch of the relations of Canada to the International Commission for Air Navigation followed by a much more detailed report on the control of civilian flying in Canada. The report then takes up commercial flying, flying done by the Provinces and finally the flying done by the R.C.A.F. for various other branches of the government. It will be seen that the report is very comprehensive and besides being useful to those who have only a general knowledge of aviation, it still contains much valuable information for the specialist in aeronautics.

### Report Lengthy

The report is too long to be summarized in detail but a brief review of a few of the salient features is made below for those who have not the time to read the full report. The Development in Canada has followed along rather different lines than those in the United States. Commercial flying by individuals and small companies which forms the backbone of commercial flying in the United States started out with a scattered population and the long winter this has been gradually dying out until now there are only a few individuals engaged in it. On the other hand the Canadian government has greatly encouraged the development of aircraft for special protection of fisheries etc. As early as 1919 the Canadian Air Board made a study of how aviation could be used by the various departments of the government. Although the Air Board has been reorganized and air work has been put under the department of National Defense the policy of the

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<sup>199</sup> Regulatory and Institutional Framework - <https://www.princeton.edu/~ota/disk2/1988/8834/883405.PDF>

## Notes on "Civil Aviation"

government to encourage in every way possible the use of aircraft by other government departments has continued. It is held that : "civilian operations are a great asset to the Air Force; apart from the direct value of training under varied conditions work of this kind strengthens the initiative and the resources of the officers and men in a way that no program of routine training can possibly do."

The dominion government at first loaned out their planes to the various provinces but having demonstrated the value of aircraft the central government decided to withdraw from this field and leave it open to commercial companies. This and during the past two years the energies of the Royal Canadian Air Force have been confined almost wholly to work with other Dominion Government services.

The development of the commercial companies which were to do the flying for the provincial governments does not seem to have been as successful as was hoped. The first company in the field was the Laurentide Co. one of the largest pulp and paper companies. Experimental work was done in 1919 using HS2Ls and later the Laurentide Air Services, Ltd. was organized to carry on the work. This company besides doing timber cruising and photographic work for the paper company entered into contracts with the Provincial Government of Ontario for the preparation of reconnaissance maps showing forest types in Northern Ontario and Quebec. The were acquired until the spring of 1924 when the Government of Ontario decided to establish their own air service and purchased the major part of the Laurentide equipment. The company retained one Vickers Vicking Napier Lion enrined amphibian and three HS2Ls for their own use. During 1924 they employed five pilots who flew 933 hr. or approximately 66,000 mi. The most important development of the season was their opening of an air mail passenger and freight service from Haileybury, Ontario into the Rouyn gold fields.

This is the first regular line of its kind to be establish -d in Canada. 890 pay passengers were carried, besides 78,0(10 lb. of freight and 15,000 letters and telegrams. The distribution of the companies flying time was freight, mail and passenger service 516 hr. test and instruction 12 hr. cross country 220 hr. survey and reconnaisauce 127 hr. photographic survey 55 hr. misc. 3 hr. No accident occurred involving injury to

One of the Fairchild Aerial Surveys Co. (of Canada) ships, a Huff-Daland seaplane The Dominion Aerial Exploration Co. using two HS2Le and two Norman Thompson flying boats flew 140 hr. on fire patrol, 180 on sketching and reconnaissance and 26 on photography. Reconnaissance and sketching was carried out over an area of approximately 24,000 sq. mi. The Fairchild Aerial Surveys Co. (of Canada) which is associated with the Fairchild Aerial Camera Corp. of New York continued its operations using an especially designed Huff Daland plane and a Curtiss Standard. Mosaic maps were made of 1,425 sq. mi. of property during 232 hr. of flying. The work was done in connection with a water storage project and also for the laying out of a new railroad.

The Alaska Airways, Ltd. which operates an international mail service between Seattle, Wash, and Victoria, B. C. flew 18,816 mi. in 242 hr. and carried 44,800 lb. of mail.

### Provincial Service

which has gone into operations on a considerable scale on its own account. During 1924 they purchased fourteen HS2ls and one Loening Airyacht. With this equipment 2,595 hr. were flown of which 1,547 was in fire protection work. 410 in sketching and photography, 85 in transportation and 66 in instruction. Five hundred and ninety-seven fires were located and 1,500 sq. mi. were mapped or sketched.

As has been stated before it is the policy of the R.C.A.F. to encourage flying by the provinces and commercial companies, and to limit themselves to cooperation with the various bureaus of the central government, such as the Department of the Interior, Department of Indian Affairs, Department of Marine and Fisheries and the Department of Customs. There is not space here to describe in detail this work but briefly 2,471 hr. or 163,988 mi. were flown of which 398 were service flying, 508 aerial survey, 1,366 forest patrol and 357 miscellaneous flying. The steady progress of this work and the growing cooperation of the other government departments is a hopeful sign and Americans would do well to become more familiar with the details of this government air work in Canada.

The government flying work during 1924 was greatly facilitated by the use of eight Vickers Vicking amphibians. Si:, of these worked in Manitoba where over 940 hr. of flying was done for fire protection. These ships are large enough so that they can carry fire fighting forces as well as locate the fires. In the case of small fires discovered before they gci underway the fire ranger and the crew of the plane put out the fire. If the fire had gained headway the plane flew be k to the base for men, pnmpps, hose and other fire fighting

## Notes on "Civil Aviation"

\* P The photographic work covered some 40,000 sq. mi. and required 450 hr. of flying. Canada with vast wildernesses and In: ;c areas dotted with lakes is particularly adapted for aerial mapping. Much of the work done however is in the far north where the sunlight hours are short and there is considerable rain. Much of the work is done in country which is practically unexplored and special methods have been devised of covering large areas with comparatively little living.

Until 1923 there was no regular airplane factory in Canada. During 1923 Canadian Vickers Ltd. obtained a contract for eight Vickers Vicking amphibians, during 1924 the firm built an experimental flying boat for forest patrol work which has proved very successful and has been recently fitted with a Wright Whirlwind engine. They also constructed and re-, modeled several Avros.

A statistical comparison of 1923 with 1924 shows that in 1923 there were 69 licensed aircraft and 44 pilots and pilot-air engineers as against only 24 aircraft and 31 pilots in the following year. The amount of flying however goes up from 2,830 hr. in 1923 to 4,389 hr. in 1924 and the number of passengers carried goes up from 5,324 to 9090. The number of air engineers went down from 186 to 170. These figures are of great interest as showing the increased efficiency of modern equipment and better organization.



**CANADIAN AVIATION - 1925**

DEPARTMENT OF NATIONAL DEFENCE - Canada

*During the season of 1922*, Parliament passed a bill entitled "The National Defence Act, 1922" creating the Department of National Defence, through the amalgamation of the Departments of Militia and Defence and the Naval Service and the Air Board. It was provided that "the Act should come into effect upon a date to be announced by proclamation"; and His Excellency the Governor General in Council subsequently issued a "*proclamation*" which brought the National Defence Act *into effect* from January 1, 1923.

Minister of National Defence : Hon. E. M. Macdonald, K.C., LL.B.

Minister's Private Secretary : Major T. W. MacDowell, V.C., D.S.O.

Deputy Minister : G. J. Desbarats, Esq., C.M.G.

**Canadian Defence Council**

President : The Hon. the Minister of National Defence : E. M. Macdonald, K.C., LL.B.

Vice President : The Deputy Minister of National Defence : G. J. Desbarats, Esq., C.M.G.

Members:

1. The Chief of Staff,
2. The Director of the Naval Service.

Associate Members:

1. The Adjutant General,
2. The Quartermaster-General,
3. The Director of the "Canadian" Air Force.

Secretary—A. B. Goldwyer-Lewis, Esq., B.A.

**Military and Naval Branches**

Chief of Staff : Major Gen. J. H. MacBrien, C.B., C.M.G., D.S.O.

Director of the Naval Service : Commodore W. Hose, C.B.E., A.D.C.

Quartermaster-General : Major Gen. E. C. Ashton, C.M.G., V.D.

Adjutant General : Major Gen. H. A. Panet, C.B., C.M.G., D.S.O.

Director of the Royal Canadian Air Force: Group Captain J. S. Scott, M.C., A.F.C., A.D.C.

**Civilian Branches**

Asst. Deputy Minister: H. W. Brown, Esq.

Secretary of Department : Lt.-Col. (Temporary) C. L. Panet.

Chief Accountant : R. P. Brown, Esq.

Director of Contracts : J. A. McCann, Esq.

Judge Advocate General—Bt. Major (temp.Col.) R. J. Orde.

Chief of the Printing and Stationery Branch, F. J. Boyle, Esq.

Chief Registration Clerk—A. E. Watterson, Esq.

**Branch of the General Staff**

Chief of Staff (National Defence)—Major-General

J. H. MacBrien, C.B., C.M.G., D.S.O., p.s.c.

Deputy Chief of the General Staff, and Director of Training and Staff Duties—Colonel A. G. L. McNaughton, temp. Col.-on-the-Staff (Hon. Brig.-Gen.), C.M.G., D.S.O., p.s.c.

Director of Military Training—Lieut.-Col. & Bt. Col. T. V. Anderson, D.S.O., R.C.E.

Director Military Operations and Intelligence— Bt. Col. (temp. Col.) J. S. Brown, C.M.G. D.S.O., p.s.c. (R.C.R.).

Director of Physical Training and Cadet Services— Lieut. Col. (temp. Col.) S. H. Hill, V.D., (m.s.c.) (s.m.h.) (s.s.).

Director of Historical Section—Major (temp. Col.) A. F. Duguid, D.S.O., (R.C.A.).

Staff Officer, Artillery Duties.—Colonel L. A. G. O. Roy, (R.C.A.).

Commandant Canadian Small Arms School— Lieut. Col. W. K. Walker, D.S.O., M.C.

Assistant Director Signals—Major (Brev. & temp. Lieut. Col.) E. Forde, D.S.O., (s.s.h.) (R.C.C. of S.).

Assistant Director Military Intelligence—Bt. Lt. Col. (Temp. Lieut. Col.) H. H. Matthews, C.M.G., D.S.O., (L.S.H., R.C.).

**Branch of the Adjutant-General**

Adjutant-General—Major-General H. A. Panet, C.B., C.M.G., D.S.O.

## Notes on "Civil Aviation"

Director General of Medical Services—Bt. Col. H. M. Jacques, D.S.O. (R.C.A.M.C.).  
Director of Organisation and Personal Services— Lt. Col. (temp. Col.) C. H. Hill, D.S.O., A.D.C. (R.C.R.).  
Director of Pay Services—Colonel A. O. Lambert, (R.C.A.P.C.).  
Director of Records—Bt. Lieut.-Col. (temp. Col.) F. L. Armstrong, O.B.E.  
Deputy Director General of Medical Services—Lt.- Col. Brev. Col., A. E. Snell, C.M.G., D.S.O., (R.C.A.M.C.)  
Assistant Director of Organization—(Bt. Lt.-Col. (temp. Lt.-Col.) H. J. Coghill, (P.P.C.L.I.)  
Assistant Director of Personal Services—Bt. Lt. Col. (temp. Lt.-Col.) D. McNiven, R.C.R.  
Assistant Director of Pay Services—Major H. T. Goodeve, R.C.A.P.C.

### Branch of the Quartermaster-General

Quartermaster-General—Major-General E. C. Ashton,  
C.M.G., V.D.  
Director of Engineer Services—Colonel A. C. Caldwell,  
(R.C.E.).  
Director of Supply and Transport—Lt. Col. (temp.  
Col.) H. C. Greer (R.C.A.S.C.)  
Director of Equipment and Ordnance Services—  
Bt. Lieut.-Col. (temp. Col.) M. C. Gillin, (R.-  
C.O.C.).  
Officer Administering Canadian Veterinary Services—  
Lieut.-Col. (Bt. Colonel) M. A. Piche, V.D.  
(R.C.A.V.C.)  
Assistant Director of Engineer Services—Bt. Col.  
(temp. Lt.-Col) S. H. Osier, C.M.G., D.S.O.,  
R.C.E.  
Assistant Director of Supplies and Transport—  
Major E. H. Spearing, R.C.A.S.C., (acting).

### MILITARY SERVICE

1. The Canadian Militia is composed of the Active Militia and Reserve.
2. The Active Militia consists of the Canadian Permanent Force and the Units of the Active Militia of the several branches of the Service which are organized and perform annual training.
3. The Reserve Militia consists of Reserve Units and of all able bodied citizens between the ages of 18 and 60 with the following exemptions:
  1. Members of the King's Privy Council of Canada;
  2. Judges of all Courts of Justice;
  3. Members of the executive Councils of Provinces;
  4. Deputy Ministers of the Federal and Provincial Governments;
  5. Clergy and Ministers of all denominations;
  6. Telegraph clerks in actual employment;
  7. Officers and clerks regularly employed in the collection of revenue;
  8. Wardens and officers of all public prisons and lunatic asylums;
  9. Members of the Naval Militia;
  10. Members of the police force and fire brigade permanently employed in incorporated cities, towns and villages;
  11. Professors in colleges and universities and teachers in religious orders;
  12. Persons disabled by bodily or mental infirmity;
  13. The only son of a widow, being her only support;
  14. Pilots and apprentice pilots during the season of navigation;
  15. Persons who, from the doctrines of their religion, are averse to bearing arms or rendering personal military service, under such conditions as are prescribed.
4. The Reserve Formations of the Active Militia, as distinguished from the Reserve Militia mentioned in paragraph 3, comprise:—
  - (a) Reserve units of City & Rural Corps.
  - (b) Reserve Depots as may be provided for in the establishments laid down for the Canadian Militia.
  - (c) The Reserve of Officers.
5. The Permanent Force is a small body of all Arms. Its duties are mainly to provide training depots and schools for the Non-Permanent Active Militia and the staffs necessary at Defence Headquarters and the Military Districts.

## Notes on "Civil Aviation"

6. The Non-Permanent Active Militia is a force consisting of all branches of the service, its total authorized strength at present being 10,458 officers and 111,461 other ranks.

(b) In addition to the above, authority exists for the formation of further units but their actual organization and recruiting of personnel is not to be proceeded with at present.

(c) Roughly speaking, all branches and active units are organized upon the British Army system.

Terms of Enlistment:

7. (a) Permanent and Non-Permanent Active Militia for a period of 3 years.

(b) Reserve Militia, for such period as is prescribed (namely, to age limit for various ranks).

(c) The Permanent Active Militia is available at all times for general service.

(d) The Governor-General in Council may place the Militia, or any part thereof, on active service anywhere in Canada, and also beyond Canada, for the defence thereof, at any time when it appears advisable so to do by reason of emergency.

THE Canadian AIR SERVICE - 1925 review:

Under the Act creating the Department of National Defence, the powers, duties and functions, vested in the Air Board by the Air Board Act, Statutes of 1919, are administered under the direction of the Minister of National Defence.

The Air Services have been *incorporated in the Department of National Defence* since the passing of that Act in 1922.

The "*Air Service*" has three functions:

(1) the air defence of the country.

(2) the conduct of flying operations for the civil services of the Government.

(3) the control of civil aviation.

*All three functions are administered by the Director of the Royal Canadian Air Force*, Group Captain J. S. Scott, [M.C., A.F.C., A.D.C.], who is responsible to the Chief of Staff for the execution of these duties.

The Royal Canadian Air Force (1925)

Director : Group Captain J.S Scott, M.C, A.F.C, A.D.C

The *Headquarters organization* divided into three branches:—

1. Assistant Director - Air Staff and Personnel:

Staff Officer - Operations:

Staff Officer - Training:

Staff Officer - Personnel:

Staff Officer - Administration:

Staff Officer - Intelligence:

2. Assistant Director - Supply & Research:

Air Supply Officer :

Staff Officer - Research:

Aircraft Inspection Officer:

Stores Inspection Officer:

Stores Officer - Supply:

3. Assistant Director & Secretary (Civil) : J.A Wilson

Controller of Civil Aviation: Flt.-Lt., A.T.N Cowley

Liason Officer - London, U.K: Sqn Ldr., G.M Croil

RCAF - Formation & Units

Headquarters at Ottawa, and Units as follows:—

The *Headquarters organization* divided into three branches:—

1. Assistant Director, Operations, Training, Staff Duties—Wing Commander J. L. Gordon, D.F.C.

2. Assistant Director, Technical and Equipment, — Wing Commander E. W. Stedman, O.B.E.

3. Assistant Director and Secretary—Mr. J. A. Wilson, Civil Aviation and other civil duties.

The "*flying organization*" divided into six (6) Units / squadrons

1. Vancouver, B.C.—Officer Commanding—Squadron Leader J. H. Tudhope, M.C.

## Notes on "Civil Aviation"

2. High River, Alta.—Officer Commanding—Squadron Leader A. L. Cuffe .
3. Winnipeg, Man.—Officer Commanding—Squadron Leader G. O. Johnson, M.C.
4. Camp Borden, Ont.—Officer Commanding—Wing Commander L. S. Breadner, D.S.C.
5. Ottawa, Ont.—Officer Commanding—Squadron Leader A. B. Shearer.
6. Dartmouth, N. S.—Officer Commanding—Flying Officer T. A. Lawrence.

The Royal Canadian Air Force consists of Headquarters at Ottawa, and Units as follows:—

The *Headquarters organization* divided into three branches:—

1. Assistant Director, Operations, Training, Staff Duties—Wing Commander J. L. Gordon, D.F.C.
2. Assistant Director, Technical and Equipment, — Wing Commander E. W. Stedman, O.B.E.
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3. Winnipeg, Man.—Officer Commanding—Squadron Leader G. O. Johnson, M.C.
4. Camp Borden, Ont.—Officer Commanding—Wing Commander L. S. Breadner, D.S.C.
5. Ottawa, Ont.—Officer Commanding—Squadron Leader A. B. Shearer.
6. Dartmouth, N. S.—Officer Commanding—Flying Officer T. A. Lawrence.

Camp Borden, Ont. is the main training station;

The technical depot, including workshops and central stores, is at Ottawa.

The units at Vancouver, High River, Winnipeg, Ottawa and Dartmouth, in addition to Air Force duties, have undertaken large programmes of civil operations, principally for the forestry and survey services of the Dominion Government.

The total personnel employed number 84 officers, 360 men, and 16 civilians.

The control of civil aviation in Canada is *under the direction of an officer of "the Permanent Air Force"*, who is appointed as *Acting Controller of Civil Aviation* and is *responsible for the technical work involved in the inspection, registration and licensing of aircraft* and air harbours; and *the examination and licensing of commercial pilots and air engineers*; and "other duties" as called for in the Air Regulations.

08 February 1925 : England : A Farman F.60 "Goliath" F-GEAB operated by Air Union on a cargo flight en-route Paris to Croyden suffers an engine failure over the Channel and crashes whilst attempting to land at Lympne.

1925 : Frank Searle is forced out his position as general manager of Imperial Airways. Searle is replaced by Mr. Woods Humphrey.

1925 : England : University Air Squadrons (UAS) were set up at Cambridge and Oxford, to promote 'air mindedness' and to stimulate an interest in, and research into, "matters aeronautical".

*"It will be a great means of enabling the spirit of aviation to spread .... It will give the brains of the country a chance of being used for aeronautical purposes which will be an important factor in home defence"* - Sir Hugh Trenchard

Although the UASs were staffed and funded by the Air Ministry, membership involved no "Service obligations" whatsoever. UAS members were not subject to the Air Force Act and they did not wear a military uniform.<sup>200</sup>

19 May 1925 : Canadian Parliament authorises the establishment for the RCAF that provided for service squadrons to fulfill operational requirements of "various government departments and agencies".

RCAF Headquarters - Ottawa, Ontario

No. 1 Flying Training Station - Camp Borden, Ontario

No. 1 (Operations) Wing - Winnipeg, Manitoba

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<sup>200</sup> UNIVERSITY AIR SQUADRONS IN WW II - Wing Commander Gerry Margiotta

## Notes on "Civil Aviation"

- No. 1 (Operations) Squadron - Vancouver, British Columbia
- No. 2 (Operations) Squadron - High River, Alberta
- No. 3 (Operations) Squadron - Ottawa, Ontario
- No. 4 (Operations) Squadron - Dartmouth, Nova Scotia

1925 : RCAF deeply involved in civil government air operations (members often thought of themselves as "bush pilots in uniform.") air force flying time in 1925 was almost equally divided between "service" flying (2,593 hours) and "aid to the civil power" (2,519 hours).

1925: OPAS operates Loening M23 'Air Yacht' flying boat G-CAOO 19 May 1925 :

1925 : Laurentide Air Service Ltd. ceases its' operation

1925 -Patricia Airways and Exploration Ltd begins operation, Northern Air Service Ltd begins operation w/ Curtiss JN-4 (first ski flying, first airmail, first aerial survey, and first flight across the Canadian Rockies)

6 February 1923 : RCAF issues destruction orders for all remaining "Lighter-than-Air" materials.

27 October - 06 November 1925 : 1st International Conference on Private Air Law, Paris : Forty-four States officially represented, with observers from the United States, Japan and Hungary. At the conclusion of the Conference,

1. a draft convention on the liability of carriers in international transport was approved by the delegates and
2. a resolution was adopted setting up a "**committee of experts**", to be known as **CITEJA**, which was to continue the work of the Conference. The first questions for study by CITEJA were:

1. **Damage caused by aircraft to goods and persons on the ground**
2. **Compulsory insurance**
3. **Establishment of aeronautical registers, ownership of aircraft, vested rights and mortgages**
4. **Seizure**
5. **Renting of aircraft**
6. **Aerial collisions**
7. **Legal status of aircraft commander**
8. **Bill of lading (air consignment note)**
9. **Uniform rules for the determination of the nationality of an aircraft**

The proposed committee was to be a purely advisory and completely independent organization both in its methods of work and its operation. This was to ensure the preservation of each State's "complete sovereignty in all matters affecting possible change in internal legislation.

8 December 1925 : United States : S. 41, introduced - provided for a Bureau of Aeronautics within the Department of Commerce through which the secretary of commerce would establish rules and regulations for the control and encouragement of civil aviation in the United States. five months later it became the United States Air Commerce Act of 1926.

1925 : First flight of the De Havilland DH.60 "Moth" light weight, two-place, single-engine biplane:

- fuselage covered with plywood
- wings and tail surfaces covered with fabric.
- 23 feet, 11 inches (7.290 meters) long
- wingspan of 30 feet (9.144 meters)
- overall height of 8 feet, 9.5 inches (2.680 meters).
- Empty weight of 920 pounds (417 kilograms)
- loaded weight of 1,650 pounds (748 kilograms)
- powered by an 60 Hp "Cirrus" inline 4-cylinder direct-drive engine manufactured by the A.D.C. Aircraft Ltd.
- two-bladed wooden propeller
- cruise speed of 85 miles per hour (137 kilometers per hour)
- maximum speed of 102 miles per hour (164 kilometers per hour).
- Range for the standard aircraft is 320 miles (515 kilometers).
- service ceiling is 14,500 feet (4,420 meters)

De Havilland built 8 pre-production and 31 production DH.60 Moths.

595 DH.60s of all variants were built by De Havilland at Stag Lane.

A total of 2112 DH 60s were built between 1925 and 1934.

## Notes on "Civil Aviation"

Entry into the DH.60 is not very easy, especially to the front seat, for which it is necessary to climb over – or seemingly through – a flying wire.

Throughout this exercise care must be taken to step only on the narrow strengthened walkway on the lower wing, which is on different sides on different variants; any error of judgement here leads to a foot going through the fabric and close of play for the day.

The hinged flaps on the DH.60 cockpit sides to ease entry and exit was introduced in 1930.

Solo flying of the DH.60 is done from the rear cockpit. The front seat of the DH.60 is on the centre of gravity - this was done so that there was no trim change for the pupil (student pilot) when the instructor got out.

Putting the front seat on the centre of gravity was common practice for almost all tandem two-seat training aircraft of the day, reversed only with the introduction of the DHC-1 Chipmunk in 1950.

The early DH.60 had a "very hard undercarriage" with a straight-through axle and large thin wheels and high pressure (40 lbs/sq in) tires. On later Moths a more tolerant "split" unit with wheels of smaller diameter and lower tyre pressure was introduced. The early Moths bounced impressively on poor landings.

09 June 1925 : H.S. Quigley takes over operations of Dominion Aerial Explorations Ltd. and Canadian Airways Ltd was created.

**CANADIAN AVIATION - 1926**

1926 : Canadian Almanac :

DEPARTMENT OF NATIONAL DEFENCE - Canada

*During 1922*, the Canadian Parliament passed a bill entitled "The National Defence Act, 1922" creating the *Department of National Defence*. This was accomplished through the amalgamation of:

1. Department of Defence
2. Department of the Militia
3. Department of the Naval Service
4. the Air Board

It was provided that "the Act should come into effect upon a date to be announced by proclamation" in order to the National Defence Act *into effect* from January 1, 1923. His Excellency the Governor General (in Council) subsequently issued that "*proclamation*" which brought the National Defence Act *into effect*.

1926 Canadian Minister of National Defence : Hon. E. M. Macdonald, K.C., LL.B.

Minister of Defence's "Private Secretary" : Major T. W. MacDowell, V.C., D.S.O.

Deputy Minister of Defence : G. J. Desbarats, Esq., C.M.G.

**1926 Canadian Defence Council**

President : The Hon. the Minister of National Defence : E. M. Macdonald, K.C., LL.B.

Vice President : The Deputy Minister of National Defence : G. J. Desbarats, Esq., C.M.G.

**Members:**

The Chief of Staff,  
The Director of the Naval Service.

**Associate Members:**

The Adjutant General,  
The Quartermaster-General,  
The Director of the "Canadian" Air Force.

Secretary—A. B. Goldwyer-Lewis, Esq., B.A.

**Military and Naval Branch Members:**

Chief of Staff : Major Gen. J. H. MacBrien, C.B., C.M.G., D.S.O.

Director of the Naval Service : Commodore W. Hose, C.B.E., A.D.C.

Quartermaster-General : Major Gen. E. C. Ashton, C.M.G., V.D.

Adjutant General : Major Gen. H. A. Panet, C.B., C.M.G., D.S.O.

Director of the Royal Canadian Air Force: Group Captain J. S. Scott, M.C., A.F.C., A.D.C.

**Civilian Branch Members:**

Asst. Deputy Minister: H. W. Brown, Esq.

Secretary of Department : Lt.-Col. (Temporary) C. L. Panet.

Chief Accountant : R. P. Brown, Esq.

Director of Contracts : J. A. McCann, Esq.

Judge Advocate General—Bt. Major (temp.Col.) R. J. Orde.

Chief of the Printing and Stationery Branch, F. J. Boyle, Esq.

Chief Registration Clerk—A. E. Watterson, Esq.

**Branch of the General Staff - Members:**

Chief of Staff (National Defence)—Major-General

J. H. MacBrien, C.B., C.M.G., D.S.O., p.s.c.

Deputy Chief of the General Staff, and Director of Training and Staff Duties—Colonel A. G. L. McNaughton, temp.

Col.-on-the-Staff (Hon. Brig.-Gen.), C.M.G., D.S.O., p.s.c.

Director of Military Training—Lieut.-Col. & Bt. Col. T. V. Anderson, D.S.O., R.C.E.

Director Military Operations and Intelligence— Bt. Col. (temp. Col.) J. S. Brown, C.M.G. D.S.O., p.s.c. (R.C.R.).

Director of Physical Training and Cadet Services— Lieut. Col. (temp. Col.) S. H. Hill, V.D., (m.s.c.) (s.m.h.) (s.s.).

## Notes on "Civil Aviation"

Director of Historical Section—Major (temp. Col.) A. F. Duguid, D.S.O., (R.C.A.).  
Staff Officer, Artillery Duties.—Colonel L. A. G. O. Roy, (R.C.A.).  
Commandant Canadian Small Arms School— Lieut. Col. W. K. Walker, D.S.O., M.C.  
Assistant Director Signals—Major (Brev. & temp. Lieut. Col.) E. Forde, D.S.O., (s.s.h.) (R.C.C. of S.).  
Assistant Director Military Intelligence—Bt. Lt. Col. (Temp. Lieut. Col.) H. H. Matthews, C.M.G., D.S.O., (L.S.H., R.C.).

### Branch of the Adjutant-General, Members:

Adjutant-General—Major-General H. A. Panet, C.B., C.M.G., D.S.O.  
Director General of Medical Services—Bt. Col. H. M. Jacques, D.S.O. (R.C.A.M.C.).  
Director of Organisation and Personal Services— Lt. Col. (temp. Col.) C. H. Hill, D.S.O., A.D.C. (R.C.R.).  
Director of Pay Services—Colonel A. O. Lambert, (R.C.A.P.C.).  
Director of Records—Bt. Lieut.-Col. (temp. Col.) F. L. Armstrong, O.B.E.  
Deputy Director General of Medical Services—Lt.- Col. Brev. Col., A. E. Snell, C.M.G., D.S.O., (R.C.A.M.C.)  
Assistant Director of Organization—(Bt. Lt.-Col. (temp. Lt.-Col.) H. J. Coghill, (P.P.C.L.I.)  
Assistant Director of Personal Services—Bt. Lt. Col. (temp. Lt.-Col.) D. McNiven, R.C.R.  
Assistant Director of Pay Services—Major H. T. Goodeve, R.C.A.P.C.

### Branch of the Quartermaster-General, Members:

Quartermaster-General—Major-General E. C. Ashton, C.M.G., V.D.  
Director of Engineer Services—Colonel A. C. Caldwell, (R.C.E.).  
Director of Supply and Transport—Lt. Col. (temp. Col.) H. C. Greer (R.C.A.S.C.)  
Director of Equipment and Ordnance Services— Bt. Lieut.-Col. (temp. Col.) M. C. Gillin, (R.-C.O.C.).  
Officer Administering Canadian Veterinary Services— Lieut.-Col. (Bt. Colonel) M. A. Piche, V.D. (R.C.A.V.C.)  
Assistant Director of Engineer Services—Bt. Col. (temp. Lt.-Col) S. H. Osier, C.M.G., D.S.O., R.C.E.  
Assistant Director of Supplies and Transport— Major E. H. Spearing, R.C.A.S.C., (acting).

1926 Canadian "Military Service"

The Canadian Militia is composed of:

- a) the Active Militia, and
- b) the Reserve.

The Active Militia consists of the Canadian Permanent Force and the Units of the Active Militia of the "several branches" of the Service which are organized and perform annual training.

The Reserve Militia consists of Reserve Units and of all able bodied citizens between the ages of 18 and 60 with the following exemptions:

1. Members of the King's Privy Council of Canada;
2. Judges of all Courts of Justice;
3. Members of the executive Councils of Provinces;
4. Deputy Ministers of the Federal and Provincial Governments;
5. Clergy and Ministers of all denominations;
6. Telegraph clerks in actual employment;
7. Officers and clerks regularly employed in the collection of revenue;
8. Wardens and officers of all public prisons and lunatic asylums;
9. Members of the Naval Militia;
10. Members of the police force and fire brigade permanently employed in incorporated cities, towns and villages;
11. Professors in colleges and universities and teachers in religious orders;
12. Persons disabled by bodily or mental infirmity;



## Notes on "Civil Aviation"

13. The only son of a widow, being her only support;
  14. *Pilots and apprentice pilots during the season of navigation;*
  15. Persons who, from the doctrines of their religion, are averse to bearing arms or rendering personal military service, under such conditions as are prescribed.
4. The Reserve Formations of the Active Militia, as distinguished from the Reserve Militia mentioned in paragraph 3, comprise:—
- (a) Reserve units of City & Rural Corps.
  - (b) Reserve Depots as may be provided for in the establishments laid down for the Canadian Militia.
  - (c) The Reserve of Officers.
5. The Permanent Force is a small body of all Arms. The duties of the "Permanent Force" are mainly to provide:
1. training depots and schools for the Non-Permanent Active Militia and
  2. the staffs (personnel) necessary at Defence Headquarters and the Military Districts.
6. The Non-Permanent Active Militia is a force *consisting of all branches of the service*, its total authorized strength in 1926 being 10,458 officers and 111,461 other ranks.

(b) In addition to the above, *authority exists for the formation of further units* but their actual organization and recruiting of personnel is not to be proceeded with at present.

Roughly speaking, *all branches and active units are organized upon the British Army system.*

Terms of Enlistment:

Permanent and Non-Permanent Active Militia enlist for a period of 3 years.

The Reserve Militia enlist for the period as is prescribed (namely, to age limit for various ranks).

The Permanent Active Militia *is available at all times* for general service.

The Governor-General in Council may place the Militia, *or any part thereof*, on active service anywhere in Canada, and also beyond Canada, for the defence thereof, at any time when it appears advisable so to do by reason of emergency.

### The Canadian AIR Service - 1925 review:

Under the Act creating the Department of National Defence, the powers, duties and functions, vested in the Air Board by the Air Board Act, Statutes of 1919, are administered under the direction of the Minister of National Defence.

The Air Services have been *incorporated in the Department of National Defence* since 1922.

The "Air Service" has three functions:

- (1) the air defence of the country.
- (2) the conduct of flying operations for the civil services of the Government.
- (3) the control of civil aviation.

*All three functions are administered by the Director of the Royal Canadian Air Force*, Group Captain J. S. Scott, [M.C., A.F.C., A.D.C., who is responsible to the Chief of Staff for the execution of these duties.

The Royal Canadian Air Force (1926)

Director : Group Captain J.S Scott, M.C, A.F.C, A.D.C

The *Headquarters organization* divided into three branches:—

1. Assistant Director - Air Staff and Personnel:

Staff Officer - Operations:

Staff Officer - Training:

Staff Officer - Personnel:

Staff Officer - Administration:

Staff Officer - Intelligence:

2. Assistant Director - Supply & Research:

Air Supply Officer :

Staff Officer - Research:

Aircraft Inspection Officer:

Stores Inspection Officer:

Stores Officer - Supply:

3. Assistant Director & Secretary (Civil) : J.A Wilson

## Notes on "Civil Aviation"

Controller of Civil Aviation: Flt.-Lt., A.T.N Cowley

Liason Officer - London, U.K: Sqn Ldr., G.M Croil

### RCAF - Formation & Units

Headquarters at Ottawa, and Units as follows:—

The *Headquarters organization* divided into three branches:—

1. Assistant Director, Operations, Training, Staff Duties—Wing Commander J. L. Gordon, D.F.C.
2. Assistant Director, Technical and Equipment, — Wing Commander E. W. Stedman, O.B.E.
3. Assistant Director and Secretary—Mr. J. A. Wilson, Civil Aviation and other civil duties.

The "*flying organization*" divided into six (6) Units / squadrons

1. Vancouver, B.C.—Officer Commanding—Squadron Leader J. H. Tudhope, M.C.
2. High River, Alta.—Officer Commanding—Squadron Leader A. L. Cuffe .
3. Winnipeg, Man.—Officer Commanding—Squadron Leader G. O. Johnson, M.C.
4. Camp Borden, Ont.—Officer Commanding—Wing Commander L. S. Breadner, D.S.C.
5. Ottawa, Ont.—Officer Commanding—Squadron Leader A. B. Shearer.
6. Dartmouth, N. S.—Officer Commanding—Flying Officer T. A. Lawrence.

Camp Borden, Ont. is the main training station;

The technical depot, including workshops and central stores, is at Ottawa.

The units at Vancouver, High River, Winnipeg, Ottawa and Dartmouth, in addition to Air Force duties, have undertaken large programmes of civil operations, principally for the forestry and survey services of the Dominion Government.

The total personnel employed number 84 officers, 360 men, and 16 civilians.

The control of civil aviation in Canada is *under the direction of an officer of "the Permanent Air Force"*, who is appointed as *Acting Controller of Civil Aviation* and is *responsible for the technical work involved in the inspection, registration and licensing of aircraft* and air harbours; and *the examination and licensing of commercial pilots and air engineers*; and "other duties" as called for in the Air Regulations.

On September 30th, 1925, there were in force, certificates and licenses as follows:

- A. Private Air Pilot's Certificates : 7
- B. Commercial Air Pilot's Certificates : 29
- C. Air Engineer's Certificates : 86
- D. Registration of Aircraft Certificates : 36
- E. Air Harbour Licenses : 24

As there has been little development of aviation as a means for the transportation of mails, supplies or passengers, the work of operating companies has largely been in connection with forest patrol and survey work for the Provincial Governments, lumber and pulp companies. Aerial photography is also beginning to play an important part in such work.

### 1926 : Great Britain: THE BRITISH GOVERNMENT

There were few changes in the Baldwin Ministry in 1925. At the General Election on October 29, 1924, the Conservatives had been returned with a decisive majority over the Labor and Liberal parties combined.

The figures were:—

Conservatives, 412;

Labour 152;

Liberals 42;

Constitutionalists, 3;

others 6.

During the year the Conservatives suffered several reverses at bye-elections, but not sufficient to affect their command of the House of Commons.

Only four women were elected in October 1924, as compared with eight in the previous Parliament.

As in the administration of Ramsay Macdonald, one woman was included in the Ministry. As yet no woman has enjoyed Cabinet rank in England.

## Notes on "Civil Aviation"

The large majority of the Conservatives did not accurately reflect the politics of the voters. The Conservatives had 412 members of Parliament for a popular vote of 8,000,000. The Labour Party had 187 Members with a popular vote of 5,500,000; and the Liberals 42 Members with a popular vote of 3,000,000.

The Conservatives thus secured one member for every 20,000 Conservative votes.

The Labour Party one Member for each 36,000; and the Liberals had to secure 76,000 votes for each Member elected.

The House of Commons, as now constituted, has 615 members, as compared with 707 in that elected in December, 1918, and 670 the number before the passing of the Representation of the People Act of 1918, the Act which besides increasing the number of members, gave the vote, under certain restrictions, to women.

The Irish representation is now only 13 (all from Northern Ireland), instead of 105: owing to the erection of the Irish Free State which embraces the three Southern Provinces and which sends no members to the British House of Commons.

The House of Commons has never been able to seat all its members.

On the floor of the House there are 346 seats and the side gallery, set apart for Members, seats 82—making a total of 450 seats for 615 members.

The Strangers' Galleries will seat in all 209 persons, but if a member occupies a seat in them he is debarred from speaking.

The House of Lords, in 1924 had 738 members, of whom 104 held peerages created since 1916.

26 peerages were held by women, whom the House of Lords has so far excluded from membership. The 28 peers, elected by the Irish peers for life, were not affected by the Government of Ireland Act of 1922. The composition of the House of Lords is as follows:—Hereditary peers, 661; Irish elected life peers, 28; Scottish peers, elected for each new parliament by the Scottish House of Lords, which comes together at Holyrood, solely for this purpose, 16; Archbishops, 2; Bishops, 24; Lords of Appeal—(life peers created to act as Law Lords), 6. In 1925 there were 121 peers, including several minors, who had not taken their seats.

No title attaches to office in Cabinet or Administration. The title Right Honourable is given to all Privy Councillors. These are appointed for life, and every member of the Cabinet, who is not already of the Privy Council, is made a Privy Councillor.

The title Honourable is given to every member of the House of Commons.

### THE OFFICE OF PRIME MINISTER - UK

Prime Minister—Rt. Hon. Stanley Baldwin

*Until 1894 the office of the Prime Minister was officially unknown.*

The office of "Prime Minister" developed as a consequence of the establishment of responsible government under a party leader, but the Prime-Minister, as such, had no official rank and no precedence.

The first official recognition of "Prime Minister" was in the form of a mention in the Court Circular, and it was 1905 before, by Royal Warrant, that the Prime Minister was given precedence next after the Archbishop of York.

There is no salary attached to the office of Prime Minister, but the holder usually combines some other office which carries a salary.

Mr. Baldwin is First Lord of the Treasury, an office usually held by the Prime Minister.

Mr. Ramsay MacDonald was also Secretary of State for Foreign Affairs, but accepted only one salary for the two offices.

In precedence, the Prime Minister now has his place between the Archbishop of York and the Lord Chancellor of Ireland, and precedence over every member of his Government except the Lord Chancellor.

### THE GOVERNMENT DEPARTMENTS

#### THE TREASURY

Chancellor of the Exchequer—Rt. Hon. Winston Churchill.

First Lord of the Treasury—Rt. Hon. Stanley Baldwin

Financial Secretary to the Treasury—Walter Guinness

Parliamentary Secretary to the Treasury— Rt. Hon. B. M. Eyres-Monsell, (£2,000)

Lords Commissioners of the Treasury—Whips, £1,000 each.

1. Major G. Hennessy;
2. Major W. Cope;
3. F. C. Thomson, K.C.;
4. Capt. Viscount Curzon, (unpaid);
5. Viscount Stanley, (unpaid)

Assistant Gov. Whip (unpaid), Capt. H. D. R. Margesson.

The Treasury, of which the Chancellor of the Exchequer is the political head, provides the means for meeting the charges for the military, naval, and civil services.

The Parliamentary heads of each of the spending and administrative departments of the Government are responsible

## Notes on "Civil Aviation"

for the estimates for their respective departments ; but it is the duty of the Chancellor of the Exchequer, with the permanent Secretary of the Treasury, to check all these estimates before they are submitted to the House of Commons in Committee of Supply.

The Cabinet becomes responsible for estimates which have been submitted to Parliament, and the rejection or reduction of an estimate by the House of Commons is tantamount to a defeat of the Government.

The duties which bring the Chancellor of the Exchequer most prominently before the country, are those in connection with the Budget.

The first Lord of the Treasury is one of its Parliamentary heads ; but the duties of the First Lord are little more than nominal, and the office is usually held by the Leader of the House of Commons.

The Parliamentary Secretary to the Treasury is the official title of the Government whip in the House of Commons. The Junior Lords are his assistants.

The Financial Secretary represents the Treasury in the House of Commons.

### THE HOME OFFICE

Secretary of State for Home Affairs: —Rt. Hon. Sir William Joynson-Hicks.

Under Secretary of State for Home Affairs: —Godfrey Locker-Lamson, (£1,500)

The Home Department has the control of:

1. the London police force, and also
2. the oversight of the police forces in the counties and municipal boroughs ;
3. responsible for the administration of the factory code, and the laws relating to mining.
4. and, generally speaking, the Department is responsible for the internal peace of the country.

Within the purview of the Home Office fall:

1. Prisons,
2. convict establishments,
3. criminal lunatic asylums,
4. execution
5. s, and
6. *all matters connected with the post-judicial execution of the criminal law.*

### The AIR Ministry

Secretary of State for Air—Rt. Hon. Sir Samuel J. G. Hoare.

Under Secretary—Major Sir. Philip Sassoon.

*At the close of the war the Air Ministry was made part of the War Department.*

So much objection was raised to this arrangement that in 1921 the Air Ministry was again erected into a separate Department. In 1923, when the first Baldwin Cabinet was formed, the Air Ministry was included in the Cabinet.

The Air Ministry was also included in both the Labour and Conservative Cabinets of 1924.

### THE FOREIGN OFFICE

Secretary of State for Foreign Affairs—Rt. Hon. J. Austen Chamberlain.

Under Secretary—Rt. Hon. Ronald McNeill, (£1,500)

All diplomatic intercourse is conducted by the Secretary of State for Foreign Affairs, who is usually of the House of Lords. The office is next in rank and importance to that of Premier, and is sometimes held in conjunction with that office. Ambassadors and consuls receive their instructions from the Foreign Office.

Foreign ambassadors in London have their audiences with the Secretary of State, and he also conducts the negotiations for international treaties. The Under Secretary represents the Department in the House of Commons.

### THE COLONIAL OFFICE

Secretary of State for the Colonies and Dominion Affairs—Rt. Hon. Lt.-Col. L. C. M. S. Amery.

Under Secretary—Hon. W. G. Ormsby-Gore, (£1,500)

The Colonial Office dates back to 1660, when a Committee of the Privy Council was appointed for the Plantations, as the Colonies were then called. This Council was continued until 1768, when colonial affairs were placed under the control of a Secretary of State.

When the United States secured their independence in 1783, the office of Colonial Secretary was abolished, and colonial affairs were managed from the Home Office.

From 1794 to 1854 the colonies were under the War Department.

In 1854 a separate Secretaryship of State for the Colonies was created.

## Notes on "Civil Aviation"

In August, 1907, the Colonial Office was organized in 3 departments;

- (1) Dominion Department, concerned exclusively with the self-governing colonies
- (2) Crown Department concerned with Crown Colonies; and
- (3) Department having charge of legal and financial business.

In 1925, the premier announced that the Colonial Office no longer correspond to the actual constitutional position within the Empire, and that the conduct of affairs for the Dominions would henceforth be under a separate new Secretaryship of State for Dominion Affairs, but that for convenience the new Secretaryship would be vested in the person of the Secretary of State for the Colonies.

### THE ADMIRALTY

First Lord of the Admiralty—Rt. Hon. Wm. C. Bridgeman.

Civil Lord of the Admiralty—Earl Stanhope, (£1,000)

Parliamentary and Financial Secretary to the Admiralty—  
J. C. C. Davidson.

The Admiralty, which has charge of the Royal Navy, is administered by Lords Commissioners. The head of the Department, who is always of the Cabinet, is known as the First Lord of the Admiralty. The other Lords Commissioners or Junior Lords are officers without seats in Parliament, and are respectively at the heads of the departments into which the Admiralty is divided. The foreign movements of ships are at the instance of the Cabinet, the Foreign Office, and the Colonial Office, and it is from these authorities that the Lords of the Admiralty receive their orders. In time of war the orders go from the Cabinet. At other times the movements of vessels are directed by the Foreign Office and the Colonial Office.

### THE BOARD OF TRADE

President of the Board of Trade—Rt. Hon. Sir Philip Cunliffe-Lister.

Parliamentary Secretaries to the Board of Trade—  
Overseas Trade Department, Arthur Michael Samuel,  
(£1,200)

Mines Department, Lt.-Col. G. R. Lane-Fox.

The Board of Trade is in charge of the administration of the laws relating to limited liability companies, and bankruptcy; and it also has the oversight of all matters connected with the mercantile marine, harbours, canals, railways, and street car lines and electric lighting. The importance and range of work of the Board of Trade have been greatly increased since the War.

In 1921, it took over the duties of the Ministries of Food and Shipping.

### THE MINISTRY OF TRANSPORT

Minister—Lt.-Col. Rt. Hon. Wilfred Ashley.

Parliamentary Secretary—Lt.-Col. J. T. C. Moore-Brabazon.

The Ministry of Transport, created during the War to oversee the transportation of war materials and food, has proved of more permanent usefulness than was anticipated. It is proposed to turn over its duties to the Board of Trade, but this has not yet been done.

### LAW OFFICERS OF THE CROWN

Attorney General—Rt. Hon. Sir Douglas McG. Hogg,  
(£7,000 and Fees)

Solicitor General—Sir Thomas Inskip, K.C., (£6,000 and Fees)

## Notes on "Civil Aviation"

### OFFICERS OF THE HOUSE OF COMMONS

Speaker—Rt. Hon. J.H. Whitley, (£10,000).

Deputy Speaker and Chairman of Committee of Ways and Means—James Fitzalan Hope, (£2,500).

Clerk of the House—Sir T. Lonsdale Webster, (£1,800).

Serjeant at Arms—Admiral Sir Colin Keppel, (£1,000).

Chaplain to the Speaker—Rev. Canon Carnegie.

Librarian—Austin Smythe.

Rt. Hon. J. H. Whitley, Speaker of the House of Commons, was first elected to his high office in April, 1921, on the retirement of Speaker Lowther. The holder of the office is strictly non-partisan, and is customarily re-elected irrespective of changes of party majorities in the House. A pension (£4,000 a year) is usually voted to a retiring Speaker and he is raised to the House of Lords.

November 1926 : Canadian Prime Minister William Lyon Mackenzie King pledges Canada's assistance in the Imperial Airship "scheme" (Programme) at the Imperial Conference.

Of all the Dominions only Canada and South Africa show any inclination toward the Airship Scheme;

Australia, New Zealand and Ireland were not convinced by the British Air Ministry's well-rehearsed presentation.

Despite problems at the House of Commons, money was set aside for the construction of an airship base, airport and mooring mast in eastern Canada.

1926 Imperial Conference attendees:

King George V

Monroe (Newfoundland)

Coates (New Zealand)

Bruce (Australia), Hertzog (Union of South Africa)

Cosgrave (Irish Free State)

Baldwin (United Kingdom)

William Lyon Mackenzie King (Canada)



15 November 1926 : The Balfour Declaration (1926) is issued by the 1926 Imperial Conference of British Empire leaders in London, First proposed by South African Prime Minister J. B. M. Hertzog and Prime Minister William Lyon Mackenzie King of Canada the declaration was named for President of the Council (and former Prime Minister of the United Kingdom) Lord Arthur Balfour who drafted the document.

It declared the United Kingdom and the Dominions to be:

- I. autonomous Communities within the British Empire,
- II. equal in status,
- III. in no way subordinate one to another in any aspect of their domestic or external affairs, though united by a common allegiance to the Crown, and
- IV. freely associated as members of the British Commonwealth of Nations. ...

The Inter-Imperial Relations Committee, chaired by Balfour, drew up the document preparatory to its unanimous approval by the imperial premiers on 15 November 1926.

The Declaration accepted the growing political and diplomatic independence of the Dominions in the years after World War I. It also recommended that the governors-general, the representatives of the King who acted for the Crown as de facto head of

## Notes on "Civil Aviation"

state in each dominion, should no longer also serve automatically as the representative of the British government in diplomatic relations between the countries.

In following years, High Commissioners were gradually appointed, whose duties were soon recognised to be virtually identical to those of an ambassador.[citation needed] The first such British High Commissioner was appointed to Ottawa in 1928.

The conclusions of the imperial premiers conference of 1926 were restated by the 1930 conference and incorporated in the Statute of Westminster of December 1931, by which the British parliament renounced any legislative authority over dominion affairs, except as specifically provided in law.

British experts came over in May 1927 to choose a site; they visited a number of locations in Ontario, Quebec and Atlantic Canada, finally settling on a piece of land on the south shore of Montreal, at St Hubert, and officially announcing this decision in August 1927.

Work on the airfield began almost immediately and St Hubert's first airmail delivery took place in November 1927.

summer of 1927 that the British Air Ministry decides to send the R.100 to Canada, and the R.101 to India. The R.100 made a successful, and very fast, mooring at St Hubert shortly after sunrise on the morning of 1 August 1930; the flight had taken almost seventy-nine hours. Thanks to a tail wind, the return transatlantic flight took only fifty-six and a half hours; safe return to England, on 16 August, the R.100 went straight into a shed at Cardington to be thoroughly examined, repaired and overhauled in preparation for other long-distance flights...

R.101 departed the mooring mast at Cardington on the evening of 4 October 1930 for India under a temporary certificate of airworthiness in bad weather. fifty-four people including Lord Thomson, the Director of Civil Aviation and the Director of Airship Development on board. After seven and a half hours in the air, the R.101 had covered only 355 km; an engine had failed temporarily and the weather was worsening. At approximately 02:10, near Beauvais, France, a large tear appeared in the outer cover, near the nose, exposing the gas cells to severe chaffing and buffeting.

As hydrogen gas poured out of the enormous gash, lift decreased and the R.101 went into a steep dive, from which it recovered; it dove a second time and gently made contact with a small hill.

Suddenly, the R.101 burst into flames; it was all over in a matter of minutes.

Only eight people managed to walk away from the wreckage, two of them dying the following day. the feeling of impending doom hovering over the entire scheme.

With the gradual closure of the Howden airship base, the engineers at the Airship Guarantee Company found themselves unemployed. A public enquiry was held, but its 1931 report could not pinpoint the exact cause of the accident.

It did say, however, that public policy decisions had played a part in the early departure, and subsequent crash, of the R.101. the R.101 disaster signalled the end of the Imperial Airship Scheme, and of all work on rigid airships in Great Britain. As in all cases before, the British government decided to terminate its airship activities without any prior consultation with the Dominions; Canada, like the others, was simply told that it was all over. As a result, the R.100 was broken up between December 1931 and February 1932; the structure was dismantled, flattened with a steamroller and sold at scrap value.

Empire Airship R.100 / R.101 specifications 1929)

R.100

Overall length 719 ft 9-1/2 in (219.38 m)

Maximum diameter 133 ft 4 in (40.64 m)

Hydrogen capacity 5,156,000 cu ft (146 000 m<sup>3</sup>)

Number of gas cells 15

Gross lift 350,610 lb (159 040 kg)

Weight, empty 236,365 lb (107 215 kg)

Disposable load 114,245 lb (51 820 kg)

including water ballast and crew 40,325 lb (18 290 kg)

fuel, oil and payload 73,920 lb (33 530 kg)

Powerplant 6 Rolls Royce Condor 12 cylinder engines

## Notes on "Civil Aviation"

Total power 3,900 hp  
Speed, maximum 81.5 mph (131 km/h)  
Speed, cruising 64 mph (103 km/h)  
Still air range with payload of 6,720 lb (3 050 kg) 4,095 mi (6 590 km)  
Endurance 64 hrs

R.101

Overall length 719 ft 9-1/2 in (219.38 m) 731 ft 3 in (222.9 m)  
Maximum diameter 133 ft 4 in (40.64 m) 131 ft 3 in (40 m)  
Hydrogen capacity 5,156,000 cu ft (146 000 m<sup>3</sup>) 4,893,740 cu ft (138 575 m<sup>3</sup>)  
Number of gas cells 15 16  
Gross lift 350,610 lb (159 040 kg) 332,775 lb (150 950 kg)  
Weight, empty 236,365 lb (107 215 kg) 254,465 lb (115 425 kg)  
Disposable load 114,245 lb (51 820 kg) 78,310 lb (35 520 kg)  
including water ballast and crew 40,325 lb (18 290 kg) 40,310 lb (18 285 kg)  
fuel, oil and payload 73,920 lb (33 530 kg) 38,000 lb (17 235 kg)  
Powerplant 6 Rolls Royce Condor IIIB 5 Beardmore Tornado III  
12 cylinder 8 cylinder  
Total power 3,900 hp 2,600 hp  
Speed, maximum 81.5 mph (131 km/h) 70 mph (112.6 km/h)  
Speed, cruising 64 mph (103 km/h) 61.5 mph (99 km/h)  
Still air range with payload  
of 6,720 lb (3 050 kg) 4,095 mi (6 590 km) 2,585 mi (4 160 km)  
Endurance 64 hrs 42 hrs

1926 : Pacific Airways - operates Curtiss HS-2L flying boat G-CAFH.

1926 - Canadian Annual year book : CONSTITUTION OF THE MILITARY FORCES . GENERAL. The Military Forces of Canada are constituted under the Militia Act of 1906, which, except for minor amendments, is still in force. The forces consist of an Active Militia (permanent and non-permanent) and a Reserve Militia. All male inhabitants of the age of 18 years and upwards, and under 60, not exempt or disqualified by law, and who are British subjects, are liable for service in the Militia in the event of a levee en masse. The Militia is liable for service in Canada and beyond Canada for the defence of the Dominion. **In time of war and when being exercised, its members become subject to the Army Act.** The Directorate of the Canadian Air Force forms a section of the Branch of the Chief of Staff, and is administered by a Director under the immediate supervision of the Chief of Staff. The Chief of the General Staff is responsible for co-ordinating the Staff work at Militia Headquarters, and the Deputy Minister for all dealings with private individuals or other Government Departments.

Under the provisions of the National Defence Act, 1922, the powers, duties and functions given the Air Board under the Air Board Act of 1919 are vested in the Minister of National Defence. The executive duties previously carried out by the Air Board are now performed by the Royal Canadian Air Force. The Air Force includes a directorate in the Chief of Staff's Branch of the Department of National Defence, headquarters at Ottawa. (b) **The control of commercial flying.**: This branch is charged with the inspection and licensing of aircraft for airworthiness; the examination of pilots, **air engineers** and air navigators for competency; the licensing of air harbours, and the supervision of commercial operations generally.

December 1926 : Winnipeg grain merchant James Richardson purchases an old HS-2L flying boat and a new Fokker Super Universal, begins freight operation as Western Canada Airways to Red lake Ontario.

1926 : Western Canada Airways (WCA) begins operation using the Fokker Universal Type : G-CAJD. The Fokker Standard Universal was designed / built in 1926. The fuselage and tail surfaces were made of welded tubular steel, covered with fabric. The wings were plywood with a Sitka spruce spar and the engine was the 200hp Wright J-4B (Win one for the Gipper!) The pilot sat in an open cockpit while the engineer travelled comfortably in the enclosed cargo section.

1926 : The Elliott Brothers of Sioux Lookout, Ontario design new skis to replace the Fokker designed skis. (Admiral Byrd uses the Elliot Brothers skis on his aircraft for all Antarctic expeditions)



## Notes on "Civil Aviation"

1926 : Beverley Shenstone meets ex-RFC (RAF) pilot Frank Wood at U of T. while employed by Wood as canoe guide.

1926 : United States adopts the German idea to use Radio for Communication as well as Direction finding.

18 August 1926 : Blériot 155 F-AIEB "Wilbur Wright" operated by Air Union with 1 pilot and 14 passengers suffers an engine failure and crashes attempting a forced landing at Hurst, Kent. The pilot and two of the 13 passengers are killed. Blériot 155 Four-engined airliner:

Crew: Two pilots plus one radio operator

Capacity: 17 passengers

Length: 14.75 m (48 ft 5 in)

Wingspan: 26.00 m (85 ft 3 in)

Height: 5.23 m (17 ft 2 in)

Wing area: 135.0 m<sup>2</sup> (1,452 ft<sup>2</sup>)

Empty weight: 3,650 kg (8,047 lb)

Gross weight: 6,350 kg (14,000 lb)

Powerplant: 4 × Renault 8Fg piston engines of 172 kW (230 hp) each. 2 above the top wing, 1 on either side of the fuselage.

Maximum speed: 175 km/h (109 mph)

Range: 500 km (302 miles)

Endurance: 3 hrs

Payload: 1500 kg

Service ceiling: 4,000 m (13,120 ft)

02 October 1926 : Blériot 155 F-AICQ "Clement Ader" operated by Air Union with 1 pilot and 6 passengers catches fire in the air and crashes at Leigh, Kent during a landing attempt at Penhurst airfield, there are no survivors. Only 2 of this aircraft type were built, the other aircraft of the type being F-AIEB. Air Union was a French airline established January 1, 1923 as the result of a merger between the airlines Compagnie des Messageries Aériennes and Compagnie des Grands Express Aériens. Air Union was merged with four other French airlines to become Air France on 7 October 1933.

November 1926 : DeHavilland 66 "HERCULES" is first flown: Fitted with three Bristol "Jupiter VI" engines, this type is intended for the Cairo-Karachi air route which is to come into operation early in 1927. The Secretary of State for Air, Sir Samuel Hoare, who will be accompanied by Lady Maud Hoare, will be one of the passengers in the first machine to fly out to the East.

A detailed description, with general arrangement drawings and sketches of constructional details, was published in FLIGHT June 10, 1926



## Notes on "Civil Aviation"

1926 : Mr. William Finlayson is Minister of Mines and Forests for Ontario -  
Director of the Forestry Branch Air Service: Captain W.R. Maxwell (1924) formerly with Laurentide Air Service

1926 : the OPAS & "the Briggs matter". Present :

Mr. William Finlayson

MR. RANEY:

Captain Maxwell

MR. LYONS -

Mr. Lawrence H. Briggs : 45 y.o in 1926. Learned the business (Engineering) when at 18 yrs of age took a 5 yr apprenticeship with the Daimler Motor Car Company of Coventry, England on automobile engines, learning to be an automobile engineer then to the Vulcan Motor Company, Southport for 2 yrs in charge of a department before coming to Canada aged 27 in 1909-1910 holding British Engineer's papers where he took up work as Foreman of the Vinot Motor Cab Company (Montreal) assembling shop for 14 mos.. Then the Toronto Taxicab Company on Jarvis Street in charge of the repairs, 1910 -1913, then to the Curtis Motor Company in Buffalo for bout a year as an as assembler in the shop,. when the war broke out in 1914 he enlisted [Regiment Number: ? ] with the division munition park of the C.E.F. as an automobile mechanic, went to France, was wounded in 1916 [lost part of one of his feet] and discharged as unfit for further service. Then came back to the Curtis Company school in Long Branch, Toronto for nine months. Then re-enlisted in the R.A.F. - the first man to enlist in Canada for the RAF.. Made department head in charge of **engine instruction** (about fifteen instructors) to the pilots of the RAF in Toronto University from January, 1917, when the R.A.F. was inaugurated Until August, 1918..

After that, released to take charge of the engine assembling tests of the Sunbeam engine at the Willy-Overland factory for the Government, in Toronto from August, 1918 after the war finished in November, kept on there six months when they went on the production of automobiles. Then re-enlisted in the Canadian Air Force in 1920 - 1922 and joined the Ontario Provincial Air Service, forestry ranging, in April, 1924 - September, 1925.

Q. Did you write a letter to the Hon. James Lyons, Minister of Lands and Forests, Toronto from Sault Ste. Marie, August 24th, 1925 after received notice of dismissal?

A. Yes.

Q. The letter reads as follows:

Dear Sir:

"I respectfully desire to call your attention to the very serious and costly mistakes in the overhaul and maintenance of 'Liberty' engines at the Sault Ste. Marie airdrome.

A change was made at the commencement of the season in the oiling system that has already resulted in a few engines being entirely written off and none with this alternative [alteration] has attained eighty hours of flying time."

"Resulting in tremendous monetary loss to engines and damage to machines, costly re-installing of engines in out-of-way places, and jeopardizing of the lives of the crews operating machines with these altered engines, and regardless of the results, engines are being shipped out in this way. Myself and others warned against this at the time the alteration was made, as perfect lubrication was impossible by this foolish system adopted. I have very strenuously opposed this and several other crude and dangerous methods of operation with the result that I am discharged by W. R. Maxwell at the instigation of S. A. Thompson.

Vast sums of money are needlessly wasted in these methods, and the above is only one of the many changes I wish to bring to your notice. Would you please see me personally here at the Sault or send a representative and go with me through the shops and verify the statements. Trusting these charges to be accepted in the spirit they are made, 'In the interest of the service,' and that I may be favoured with a reply per return, awaiting your instructions,

Yours very truly,

L. H. BRIGGS."

The reply to that letter is from the Department of Lands and Forests, Toronto, September 3rd, 1925.

It reads:

Dear Mr. Briggs:

"I may say in reply to your letter of August 24th, that I have forwarded copy to Captain Maxwell and to Mr. Zavitz, and have asked for a written report in connection with the matters referred to. As soon as I have their reply, I will, if necessary, take the matter up with you further.

"You state in the last paragraph of your letter that this is only one of the many charges that you desire to bring to my notice and with a view to getting all the facts in the case, I would appreciate it very much if you would let me have the additional information you possess so that I may give it my attention.

## Notes on "Civil Aviation"

"I am glad that you are writing in the interest of the service and apparently not dissatisfied because you have been discharged, and I believe that it would have been more in the interest of all concerned had you forwarded this information when it first came to your attention. Trusting that you will let me have the additional information you possess immediately so that I can give it prompt attention.

Yours very truly,

(Signed) JAMES LYONS (Minister)."

Q. Did you go to see Mr. Lyons by appointment?

A. Yes, I came to see him the minute I got back from the Sault to Toronto.

Q. In the meantime if I may take you over this letter of yours to Mr. Lyons: "I desire to call attention to the very serious and costly mistakes in the overhaul and maintenance of 'Liberty' engines at the Sault Ste. Marie airdrome." What was the matter referred to?

A. The oiling system in particular.

Q. Of the engines?

A. Yes.

Q. What is the type of engine that is used by the Government?

A. Liberty.

Q. Liberty engine?

A. Yes.

Q. Installed in what do you call the machines?

A. H.S. 2 L.

Q. That does not convey much?

A. That is the type of machine.

Q. What would you call it? Are they hydroplanes?

A. Flying boats.

Q. Are they hydroplanes?

A. They are hydro-airplanes.

Q. What is the difference between a flying boat and a hydroplane?

A. One is a flying boat pure and simple; what its name implies, a boat with wings to make it fly. The other is a flying plane with floats that skims over the water.

Q. When were they purchased, before or after you came to the service?

A. I think before I came.

Q. Were they at the Sault before you came?

A. No.

Q. They came afterwards?

A. I did not move to the Sault until the winter of 1924.

Q. When do you say you went into the service?

A. In April of 1924.

Q. Between April and the end of the year where were you?

A. On operations, forestry operations, at Timagami and Orient Bay.

Q. Were there flying machines there?

A. Yes, certainly.

Q. Were those flying machines now at the Sault there?

A. Yes.

Q. When did they come into the service?

A. I think when we were at Timagami; I was not turned on engines and I think they were flying at Orient Bay.

Q. How far is that from the Sault?

A. About 500 miles.

Q. You were at Timagami for the season of 1924?

A. We were changed from Timagami to Orient Bay about August.

Q. Were you in charge of a boat at Orient Bay?

A. Only one, one engine.

Q. And you were there for the remainder of that season?

A. Yes.

Q. When were the machines brought into the Sault?

A. I was on the first flown into the Sault, rather the second one, November,

## Notes on "Civil Aviation"

1924. That was the first of November.

Q. When was the aerodrome ready for occupation at the Sault?

A. Sometime in February or the first week in March, 1925.

Q. And where were the machines housed in the meantime?

A. They were anchored on the river.

Q. Before we proceed to inquire about these flying boats, you know where they came from originally? Were they new?

A. No they are not new. The H.S. 2 L's were built during the war. They were built by the United States Navy Department; they were built by different contractors.

Q. Had they been used before they were purchased by the Government?

A. I understand that the first nucleus

MR. FINLAYSON: Never mind if you only understand.

WITNESS: I am not guessing. I understand that the first machines we got at Sudbury were taken from the Laurentide Air Service.

MR. RANEY: How old were the machines to your knowledge when they came?

A. Well they were built in 1917, eight years then.

Q. What do you say as to the other machines? Are they modern machines, speaking in the sense of air service, or obsolete?

A. Obsolete.

Q. Are they building them now?

A. No.

Q. How long is it since they were built?

A. There has not been a flying boat constructed in the last three years.

CHAIRMAN: How long?

WITNESS : Three years.

MR. RANEY: How long is it since this particular type of flying boat was discontinued?

A. Not after 1917; not after the war.

Q. How many were built altogether?

A. About 5,000.

MR. FINLAYSON: Does he know what he is talking about because he is all wrong. Do you swear there was none built?

WITNESS: No H.S. 2 L's.

MR. FINLAYSON: You swear that?

WITNESS : Yes.

MR. FINLAYSON: Nowhere?

WITNESS: Certainly.

MR. RANEY: You will have a chance to cross-examine him. I see in the report of the Minister of Lands and Forests for 1923 that reference is made to the air patrol. Do you know the author of this part of the report?

A. I was not paying attention.

Q. I say in the report of the Minister of Lands and Forests for 1923, the section devoted to the air patrol, do you know who was the author of that report?

A. I think I have seen it. It is Mr. Johnson's report?

MR. FINLAYSON: What would a mechanic know of that?

WITNESS: I have seen it. It has been lying around.

MR. FINLAYSON: He understands it is by Mr. Johnson.

MR. RANEY: Have you papers as an automobile engineer for Canada?

WITNESS : As an air engineer.

MR. RANEY: I see at the top of page 179 of this air patrol report, whether by Mr. Johnson or someone else, section 5, he says a special type of machine should be designed for this class of work as the machines available at the present time are not entirely suitable in that operating cost is high and performance low. What do you say about that?

A. That is quite correct, but in justice to the Department they did not

## Notes on "Civil Aviation"

have any other machines available when they bought those. I don't want to say anything against them in that way.

Q. We are trying to deal with facts. Do you know, as an expert in this line, whether any H.S. 2 L's have been built during the past six or eight years?

A. I don't think any have been built since. There may have been one or two assembled from the parts lying around at different plants, but none actually built.

Q. What do you say as to the size of these machines?

A. Well they are very large machines but not larger than they ought to be to make them necessary to fly.

Q. For the weight of the machine?

A. For the machine the H.S. 2 L is a very capable machine.

Q. Is it suitable for this kind of flying?

A. It does the work, but it is not suitable.

Q. Why?

MR. FINLAYSON: This man is a mechanic.

MR. WIDDIFIELD : Then he ought to be competent to answer the question.

MR. RANEY: You can go ahead when I am through.

MR. FINLAYSON: Get an expert for expert evidence.

MR. RANEY: What do you say as to the suitability of these flying boats for fire patrolling?

A. I say that they could get a much more suitable machine.

Q. Of what type?

A. Seaplane.

Q. Larger or smaller?

A. Smaller.

Q. How much smaller?

A. Seventy-five per cent.

Q. What about the cost of operating these machines?

A. Well, how far do you mean Mr. Raney, do you mean

Q. Compare the cost of operating these flying boats and the smaller machines you refer to.

A. There is practically no comparison at all.

Q What is the consumption of gasoline per hour of your flying boats?

A. About thirty gallons an hour.

MR. FINLAYSON: Do you swear that? You had better make a note and be careful.

MR. RANEY: What is the cost, the number of gallons for a hydroplane, for the smaller machine?

A. Nine or ten.

MR. FINLAYSON: Do you say the H.S. 2 L takes thirty gallons an hour?

WITNESS: You must understand in that Mr. Finlayson, that there is quite a little consumption in w7arring up and getting away.

MR. FINLAYSON: You are talking about flying hours.

MR. RANEY: If you will leave him alone you will have full opportunity later. It has been said here Mr. Briggs that the cost per flying hour of the present service is \$46 without overhead and \$53 with the overhead?

MR. LYONS: Fifty-four dollars.

MR. RANEY: Forty-three dollars a flying hour without overhead and \$54 an hour with overhead. What do you say about that?

WITNESS: How many hours is that supposed to cover?

MR. RANEY: The whole season.

WITNESS: For 1924 with an average of 2,000 hours salaries alone would come to more than \$43 an hour.

Q. Have you calculated the actual cost per flying hour in the present service?

A. No, sir, I don't know what flying hours they have had.

Q. You say about 2,000 hours?

## Notes on "Civil Aviation"

A. On the average, yes.

Q. Can you give the Committee any information as to the cost per flying hour of the present service?

A. I have no idea of the overhead. I cannot do that.

Q. Leave out the overhead.

A. It is not possible at \$50 an hour.

Q. Leaving out the overhead and taking out everything else what in your opinion is the cost?

A. I should imagine

MR. FINLAYSON: Don't imagine.

WITNESS: I will say that with the salaries, gasoline and oil consumption and camp expenses, it would run nearer \$100 than \$50.

MR. FINLAYSON: Leave out the overhead.

MR. RANEY: Leave the witness alone. Tell me what is your estimate of the cost of flying service an hour leaving out the overhead?

A. I would not make an estimate. I am not in a position to do that. I will say that for 2,000 hours of flying service the salary cost would be more than \$50 an hour.

Q. Salaries are part of overhead?

A. I don't know anything about that. You can't fly a machine without anybody in it.

Q. Do you know what gasoline cost?

A. Not the contract price. I know it cost a lot to deliver.

Q. Why?

A. In many cases it is a long rail haul and then after taking it from the railroad it has a long way to go to the lakes.

Q. Motorboat haul?

A. Yes.

Q. What about the size of the aerodrome if the machines had been of the smaller type you speak of?

A. Well, the airdrome was built for the H.S. 2 L's.

Q. Then it would be four times too large?

A. Not four times.

CHAIRMAN: Mr. Raney is quite right. He said that the machines could have been reduced by 75 per cent., which means that it is four times as large.

MR. RANEY: If that is so the aerodrome is about four times as large as it need be for the protection of machines of the right type?

A. That is if you have only the same quantity of machines.

Q. Now come back to the specific thing you started out to tell Mr. Lyons about. "I respectfully desire to call attention to the very serious and costly mistakes in the overhaul and maintenance of Liberty engines at the Sault Ste. Marie aerodrome." What was the mistake you had in mind?

A. The mistake of oiling in the crankshaft.

Q. In the crankshaft there are holes on the left-hand side of the crankshaft, a number of holes drilled in for lubrication?

A. Just one for each bearing.

Q. And these holes were blocked up, you say, and other holes opened on the other side of the crankshaft?

A. Yes.

Q. When was that done?

A. Immediately we started to overhaul the machines for the coming season.

Q. What year?

A. The winter of 1924-25. I would like to say right here that Captain Maxwell at the time I told him about it said they had done two or three of the engines previously in the Laurentide Air Service, so he naturally thought it was a good improvement.

Q. What was the object sought to be attained in this change of the lubrifying

## Notes on "Civil Aviation"

system?

A. To keep the oil cleaner and prevent any carbon getting into the crankshaft.

Q. Did you register any opinion on it at the time?

A. I had registered my opinion. I spoke to the men about it.

Q. Who was the man in charge?

A. At that time, Gordon Hutt.

Q. Was this done at his instance or Captain Maxwell's?

A. I don't know.

Q. Did you speak to him Mr. Hutt?

A. Yes.

Q. What did you say?

A. I said it would not work.

Q. Then you warned him?

A. Yes.

Q. Of the change in the engines?

A. Yes.

Q. How many are there?

A. I could not say. About twenty.

Q. For how many machines?

A. Fourteen machines.

Q. That is to say you have spare engines?

A. Yes, so that when they are taken out to be reconditioned another one can be put into place.

Q. The engines require to be reconditioned about how often?

A. Every eighty hours of flying time.

Q. During the winter of 1924-25 were all the engines changed in that way?

A. Yes.

Q. Was a test made to see how the new plan would work?

A. They were not all changed. They were not all finished by the time the machines were going out.

Q. Nearly all?

A. A big percentage.

Q. Were any tests made to see how the change would work?

A. Not beyond a few minutes round on the block.

Q. Well, after all, or nearly all of the Liberty engines were changed what were they worth?

A. I could not tell.

Q. About how much?

A. About \$2,000 each.

MR. FINLAYSON: A mechanic knows a lot about this.

MR. RANEY: Don't worry; he ought to know something about it.

WITNESS: It depends on the cost of production. The cost originally was \$12,000 or more.

Q. Each engine?

A. Yes.

Q. Only a small production you mean?

A. There was quite a large one.

Q. What do I understand from that? What is the statement about the cost?

A. The engine is a war type engine and naturally they are down to old engines now and they can be bought quite reasonably.

Q. I suppose the Government can show what it paid for them. These engines having been changed in this way, what happened to them when the flying season started? When did it start?

A. I cannot say. I was in the shop at the time. I think the machines went to Sudbury first.

MR. FINLAYSON: This is all supposition.

MR. RANEY: In 1925?

## Notes on "Civil Aviation"

A. I was on the last machine to leave the shop to go to operations.

Q. What do you mean operations?

A. Forest patrol.

Q. How many men do these machines carry?

A. Four.

Q. How many usually go?

A. Three.

Q. The pilot the observer and

A. The engineer.

Q. And you go as the engineer. Can you drive a machine?

A. Yes. I am not a licensed pilot and not allowed to.

MR. FINLAYSON: This man is a mechanic.

MR. RANEY: Let him alone.

MR. FINLAYSON : You ask him if he has been driving machines many times?

MR. RANEY: Have you driven?

WITNESS: Not very often. I have relieved the pilot a little. It is a heavy job driving four or five hours in the air.

Q. What happened when the machines were altered and went into the air? What was the first thing that happened?

A. In my own particular case they burned out the bearings and smashed the connecting rod.

Q. Stay there, about the practice, who went with you?

A. Mr. Oakes, the pilot; Mr. Sanderson, the observer, and myself as engineer.

A. And you started from the Sault to go to?

A. Sault Lake.

Q. A distance of round about five or six hundred miles in round figures. What date?

A. I could not say for certain.

Q. Have you got the record?

A. Not here?

Q. In August?

A. No, July.

Q. Now what happened? Had the engine been in the air after the change?

A. Yes, about fifty hours of flying.

Q. What happened on the trip?

A. The reason we made the trip was because the engine was not satisfactory and they were having great difficulty to get off the water. We wasted an hour in one instance. They argued that it was the rigging and my argument was that it was the engine. Thompson ordered us to Sault Lookout to have the rigging changed. We left about two o'clock in the afternoon. We just got about sixty miles from the station at Orient Bay when without any warning the oil pressure went out, showing on the gauge and I asked Oakes to make for the lake.

Q. That was so that you could land?

A. Yes. Just as he turned the crash happened. The connecting rod broke, the oil had got so hot the engine was on fire.

Q. What did you do?

A. We could do nothing. We got the fire extinguisher out and extinguished the fire immediately we got to the water.

Q. You made the water, by gliding I suppose?

A. Yes. I was successful in getting the fire out without serious damage to the machine.

Q. The machine, was it repairable or destroyed?

A. The machine was not damaged.

Q. I mean the engine?

A. It was absolutely written off, only a little salvage on it.

Q. You had to send back to the Sault and have another engine brought up?



## Notes on "Civil Aviation"

A. Yes, sir. We were sixty miles from the base.

Q. From the Sault?

A. From Orient Bay.

Q. How far from the Sault?

A. It is 400 miles.

Q. Did you have to have the engine brought from Orient Bay or the Sault?

A. From the Sault.

Q. And you had to wait until it arrived?

A. Yes.

Q. Was that the first of these changed engines that had gone wrong?

A. I don't think so. I think Mr. Thompson had one.

Q. You were in the shops?

A. No I was out at Orient Bay.

Q. What was the next thing that happened?

A. We got another engine and got it installed and that was the time I was discharged.

Q. I see.

A. The engine arrived on the night train at Orient Bay and I went down and got it off at 10.30, put it on the boat, took it to the lake and stayed on the job until it was installed. Two days after I was coming out of the tent at five after eight in the morning and Thompson was outside with his watch and said, "We start work at eight." I had been working two nights previously and two days and Thompson said I would not be required after the end of the month. Naturally I felt very sore and told him what I thought. He wrote to Captain Maxwell and possibly explained the situation but I think he must have exaggerated.

Q. You were dismissed?

A. Yes.

Q. How many engines went bad?

A. I cannot say. When I got back I would say there were nine or ten.

Q. Out of business?

A. Yes.

Q. Do you know how many accidents occurred of the character of the one you have told us about?

A. I don't know how many. Thompson had one, a new engine I handled went somewhere.

MR. FINLAYSON: Do you know about this or is it hearsay?

WITNESS: Certainly, I was at the Sault when I left Orient Bay.

MR. RANEY: Don't be too nervous.

MR. FINLAYSON: I am not nervous,

MR. RANEY: He ought to know about it.

MR. FINLAYSON: Getting a discharged mechanic to give expert evidence; you know this man is guessing and talking and theorizing.

MR. RANEY: What happened to the engine you installed after the accident?

MR. FINLAYSON: Does he know of his own knowledge?

CHAIRMAN: Do you know?

WITNESS: Yes.

MR. RANEY: Answer the question.

WITNESS: That engine went the same way; the same accident exactly.

I don't know how many hours it flew. The wire came through, the engine was smashed.

MR. FINLAYSON: That shows he does not know of his own knowledge.

MR. RANEY: How many engines do you know of going in this way after the change.

MR. FINLAYSON: Of his own knowledge.

WITNESS: I could prove I know if I am allowed to ask a question.

MR. RANEY: Never mind Mr. Finlayson. How many engines were out

## Notes on "Civil Aviation"

of business?

A. I could not say how many. I know eight or nine at the Sault, including three at Orient Bay.

Q. Put out of business?

A. Yes.

Q. And how many of these engines were so badly injured that they were of no further use?

A. I cannot say.

Q. How many repairable?

A. All repairable to the extent that you could buy new parts.

Q. Practically, how many were repairable?

MR. FINLAYSON: All, he says.

WITNESS: If you bought new parts, which would include the crankcase.

CHAIRMAN: You are speaking of the one that went wrong?

WITNESS: That was in very bad shape, the salvage possibly only a few cylinders and valves and stuff like that.

MR. RANEY: Was your engine brought to the base?

WITNESS: Yes, I dismantled it at the Sault.

MR. FINLAYSON: It is in use again now.

MR. RANEY: They saved the parts that could be saved?

WITNESS: No parts could be saved that were broken.

MR. RANEY: What was done with respect to the other engines that had not been destroyed or injured in this way?

WITNESS: I don't get you.

MR. RANEY: We have the fact that the crankcase had been changed by blocking up the holes on one side and opening them on the other side.

MR. BLACK: You say the crankcase and he says the crankshaft?

MR. RANEY: I mean the crankshaft.

MR. BLACK: There is a vast difference.

MR. RANEY: What happened to those machines? They were all put back to the original condition?

A. Yes.

Q. All the holes that had been opened were blocked up and the old holes that had been blocked up were reopened?

A. Yes. I might explain right here that when the holes were drilled on the opposite side of the shaft when the engine got any speed it was impossible for the oil to come out, it does not matter what the pressure is, just as when you swing a bucket of water round the centrifugal force will keep it in in the same way.

Q. Did you argue that out with the man in charge?

A. I had had the same trouble with the Willys-Overland five years ago.

Q. You knew the crankshaft was properly made?

Yes.

MR. WIDDIFIELD: He was an expert engineer.

Q. Do you know what was the real reason for your dismissal?

A. No, sir, I do not.

Q. You were never told?

A. No.

Q. Did you ask anybody?

A. No, I believe I did say to Mr. Lyons when I was here in his office I really did not know what I was discharged for.

Q. What did he say?

A. Mr. Lyons did not say anything about it. He left it to Captain Maxwell, naturally, who should be taken on and who should not. I am not blaming Mr. Lyons.

Q. Were you the only man discharged?

A. Yes, sir.

Q. You say in your letter: "A change was made at the commencement of the season in the oiling system that has already resulted in a few engines being

## Notes on "Civil Aviation"

entirely written off and none with this alteration has attained eighty hours of flying time." Is that true?

A. Before I left the Sault Captain Maxwell said that some had attained eighty hours.

MR. FINLAYSON: We will give a list of the whole service if you like.

MR. RANEY: "Resulting in tremendous monetary loss." Let us see what the new parts cost. A crank case, I understand is \$800?

CHAIRMAN: In the letter I understand he said the change had resulted in a number of the machines being entirely written off. This evidence does not support that.

MR. RANEY: What do you say about that?

WITNESS: The particular engine I had was. There was very little salvage.

Q. What about parts for the Liberty engine, is there difficulty in getting them?

A. That I cannot say.

Q. How long is it since they were made?

A. There are none made, I think, by the original makers.

Q. "Resulting in tremendous monetary loss to engines and damage to machines in out-of-way places" I suppose that is a factor?

A. Mine was an out-of-the-way place, five or six hundred miles from the Sault.

Q. How many days would the crew be detained?

A. I was eight days before I got the engine.

Q. And were the pilot and observer there?

A. Yes.

Q. Kept there eight days?

A. Yes.

Q. "Jeopardising of the lives of the crews," was that true?

A. Certainly, with the engine breaking up like that. If we had had another half-mile to go we could not have made the water.

Q. What would have happened?

A. We should have landed in the bush.

Q. What would have happened then?

MR. FINLAYSON: They would have injured some branches and trees.

MR. RANEY: You would not have wanted to be on the machine?

A. Not if we could have helped it. I may say that nobody gets away from the water unless it is absolutely necessary. We always keep to the watercourse.

Q. "Myself and others warned against this at the time the alteration was made, as perfect lubrication was made impossible by this foolish system adopted. I have very strenuously opposed this and other crude and dangerous methods of operation with the result that I am discharged."

A. I might say, Mr. Raney, that when I saw Hon. Mr. Lyons he was very nice to me and said that he could say not anything until he got the written report.

Q. Did you ever hear of a written report afterwards?

A. No.

MR. RANEY: Have you one?

MR. FINLAYSON: We will give our evidence.

MR. RANEY: If you decline to give it now probably I will have to recall the witness.

MR. FINLAYSON: He is here for causing trouble; he will be available.

MR. RANEY: How many machines were out of commission at one time at Orient Bay?

A. There was only one when I left; I know there were three afterwards.

CHAIRMAN: Do I understand that you were discharged almost immediately after the machines which had been changed went into the service. After these machines which had the oiling system changed, how long after that was it before you were discharged?

WITNESS: Quite a long time. I was discharged on the fifth of August.

## Notes on "Civil Aviation"

MR. RANEY: When did your service come to an end?

A. On the fifth of September.

Q. How many machines were put out of business before you left in September?

A. I cannot say how many.

Q. How many do you know of?

A. I know of three at Orient ^ Bay.

Q. How many more?

A. I don't know where they were; one or two in different places. Captain Maxwell will bear me out in that. We were working night and day getting the engines out.

Q. What do you say about co-operation between the Air Service and the Fire Ranging staff?

A. Always a little at loggerheads.

Q. Take Timagami station for instance. What about it?

A. I will have to explain that right from the beginning.

Q. Do you know the facts?

A. Yes.

Q. Go ahead by way of illustration.

MR. FINLAYSON: Is the Service to be brought into question? No doubt there are occasional differences between a novel and an old established branch. Is that to be brought into question and policy discussed by a mechanic before the Committee?

MR. RANEY: Go on witness, please.

MR. FINLAYSON: I leave it to the Committee. It seems to me a waste of time and bad for any service. It is just as if we got an office boy from your office to discuss friction between you and someone.

MR. RANEY: This gentleman is not an office boy.

MR. FINLAYSON: That is the relationship exactly. He is a mechanic working on the ground. What does he know?

MR. RANEY: Let us get on. Were you at Timagami? I should like you to denote what was the failure of co-ordination of these two services and the general efficiency or inefficiency.

MR. FINLAYSON: The result of the forest protection service for the past two years is simply marvellous and I didn't think it should be called into question by some discharged mechanic.

MR. RANEY: You raised the question yourself in your examination of Mr. Lyons. If you had not done so I would not now.

MR. FINLAYSON: On this point?

MR. RANEY: You introduced the whole question.

MR. FINLAYSON: You are bringing a discharged mechanic, with animus no doubt

MR. RANEY: Go on, discredit him.

MR. FINLAYSON: Those are the facts. Any man may be unfortunate and incapable and get discharged.

MR. RANEY: Pardon me. You say that being incapable he was discharged. That was never suggested Mr. Chairman, he says

MR. FINLAYSON: I don't care a rap what he says; when it gets down to suggesting that two branches of the Service are not co-ordinated I think it should be obtained from someone who might know something about it.

CHAIRMAN: Unless it has some direct bearing on the inquiry

MR. RANEY: I would not bring it unless I thought it had some bearing.

MR. WIDDIFIELD: I am a member of this Committee. I want to hear the evidence.

CHAIRMAN: There is no need to get excited. We are not going to close off anything relevant.

MR. WIDDIFIELD: Mr. Finlayson talks about him being a discharged mechanic. The fact that he is discharged is opportune perhaps to bringing out

## Notes on "Civil Aviation"

the evidence and that is what the Committee wants to know. I object to three or four talking at once. I want to hear the evidence and I think the interrogator and the witness should be left alone for the time being.

MR. FINLAYSON: Mr. Widdifield, I am not

MR. RANEY: When Mr. Finlayson was examining witnesses I have not interrupted.

CHAIRMAN: I don't think he did.

MR. RANEY: Ever since this examination started there has been an attempt to injure this witness, calling him names, a mere mechanic, a discharged mechanic.

MR. FINLAYSON: I never said a mere mechanic.

MR. RANEY: I ask you to rule, Mr. Chairman, that Mr. Finlayson must leave him alone and examine him when his turn comes.

MR. FINLAYSON: Sit down for a minute and let me get a word in. I only wanted to point out to the Committee that if we are going into the question of co-ordinating the service there is a proper way of doing it.

CHAIRMAN: It seems to me that we should not prevent Mr. Raney pursuing this line of investigation if he thinks it is relative to the subject he has brought forward. I was going to say that Mr. Widdifield is getting on dangerous ground when he says what he wants to do as a member of the Committee. We are not dealing with it in that way.

MR. CALLAN: What in your opinion caused the failure at Sault Lookout?

WITNESS: Lack of lubrication.

MR. CALLAN: Could you give me a sketch of how the lubrication system works?

WITNESS: Yes.

MR. RANEY: Let him do it now. It is an important matter. It had caused the loss of \$50,000.

CHAIRMAN: Of course, Mr. Briggs could not give an estimate of that.

WITNESS: I don't think I should give evidence against people in the force.

CHAIRMAN: I think you are trying to give what you know.

MR. RANEY: Will you explain for Mr. Callan?

CHAIRMAN: May I suggest drawing a large plan of the crankshaft and piston rods connecting.

(Diagram is drawn.)

MR. RANEY: Stand up and tell the Committee.

(Witness explains diagram.) He points out where holes are drilled so that oil can be forced by pressure through the shaft.

CHAIRMAN: The same as an automobile.

MR. CALLAN: Inside the shaft?

WITNESS: Yes, and then up the pipe to the cam shaft. When the engine gets up speed, 2,000 revolutions, not quite, 1,400 revolutions per minute, when it gets up that speed and the hole is drilled on the other side the centrifugal force would keep it in.

MR. RANEY: You must have the oil working with the centrifugal force and not against it?

WITNESS: It was a good idea to have the holes on the other side because it would prevent a lot of carbon getting in and keep the shaft cleaner.

MR. CALLAN: What is the size of the hole?

WITNESS: About one-eighth outlet; the hole through the shaft is about a quarter.

MR. CALLAN: What diameter is the pipe that holds the oil?

WITNESS: Every time this goes to the hole it shoots through.

MR. CALLAN: Is there not a possibility of that pipe becoming clogged?

WITNESS: No, because the oil is filtered before it is turned into circulation. It goes through a screen.

MR. CALLAN: There is no solid matter. Is there not a possibility regardless of which side of the shaft that oil was placed that there might be a possibility

## Notes on "Civil Aviation"

>f that hole becoming blocked up?

WITNESS : It has grown very hot on occasions and burned out the bearings.

MR. CALLAN: What is the shaft made of?

WITNESS: Steel.

MR. CALLAN: What are the bearings made of?

WITNESS: White metal; babbitt metal.

MR. CALLAN: Is there a possibility that the babbitt metal may get into hole and restrict it?

WITNESS : It is a possibility overcome by the pressure of the feed of the oil.

MR. CALLAN : Regardless of what side the oil goes is there that possibility?

WITNESS: Yes, the babbitt can get into the hole but not sufficient to stop oil circulation.

MR. RANEY: It means that you must keep examining.

WITNESS: After every eighty hours of flying.

MR. CALLAN: That's all.

CHAIRMAN: It is the same system on most of the automobiles for oiling.

MR. RANEY: To avoid further friction I will not pursue the subject of Timagami. There is another thing I want to touch on with this witness. The statement is that in 1923 two million acres of the wooded wealth of Ontario was destroyed and that last year, 1925, only 10,154, and the improvement is startling and staggering and so on. Was there any difference between the seasons 1923 and 1925?

WITNESS: Yes.

Q. What is the difference?

A. One was dry and two were wet.

Q. 1924 and 1925 were wet?

A. Yes.

Q. Take 1925, when did your machines first leave the water?

A. I could not be exact to the day In May.

Q. When they first left the water for fire patrol?

A. Right on then.

Q. Was it 1924 that was wetter than 1925?

A. I don't think there was very much difference.

Q. What was the extent of the fire patrol in 1924 and 1925 as compared with 1923? Was it as large in those two years?

A. I don't know what was the time in 1923. It was common talk it was a dry season.

Q. What about the necessity for an air patrol in 1924 and 1925?

A. There is always a necessity for an air patrol. You can't get away from that. It is the only system for spotting fires.

Q. But compared with a dry season was there as much or not?

A. I think that for eight weeks we never flew at all.

Q. That is what I am trying to get at. In what year?

A. In 1925.

Q. Why was that?

A. It was a wet season.

Q. Wet woods. What months would that be?

A. The months would be May, June and July.

Q. You hardly flew at all in July?

A. The pilot I was with did quite a bit of flying. I think we had the record up to that time. But we were doing quite a bit of surveying and photographing.

Q. Not fires?

A. We had some fires because we had a large district.

Q. But very little for May, June and July of 1925?

A. Very little.

MEMBER: Is that an examination to show why the Department makes a good showing.

## Notes on "Civil Aviation"

MR. RANEY: Take the witness, Mr. Finlayson.

MEMBER : We have to take the questions for what they are worth. Supposing a man is dismissed has he a right to come before the Committee like this? Is every man discharged by Captain Maxwell to come here and try and destroy the system altogether?

MR. LYONS: I have no objection to Mr. Briggs or anyone giving his views. All I ask is an opportunity to present the facts which will make him look so ridiculous it will make him wish he never appeared here.

MR. FINLAYSON: I suppose gentlemen, there is this view: This is not the army. Those who were in the army know that this kind of thing would not be entertained. We are a public body and I think we should allow reasonable

latitude for a discharged man's feelings, and I fancy that the Committee and the public generally will know what is to be expected

MR. RANEY: Go ahead; don't abuse the witness.

MR. FINLAYSON: You have ordered me several times and you ordered Mr. Graves. I hesitate to order.

MEMBER: I object to wasting my time here.

MR. FINLAYSON: You have to take these things as they come.

Mr. Briggs examined by Mr. Finlayson.

Q. Mr. Briggs, when did you enter the Government service?

A. In April, 1924, I think it was April, March 20th the letter was dated.

Q. Never mind, April will do. Before that I was not here when you gave the first part of your evidence you served in France?

A. Yes.

Q. As mechanic?

A. As mechanic in the Divisional Ammunition Park.

Q. You were in the D.A.C.?

A. The A.S.C.

Q. You were not in the Flying Corps?

A. No, sir.

Q. And when did you start this? When did you get into this branch?

Were you ever in the air service?

CHAIRMAN: After he was discharged he lost part of his foot and came back he came to Canada and joined in 1917 in the R.A.F. as a mechanic and was with them in various capacities for the balance of the war.

Q. Your service was in the Army Service Corps?

A. Yes.

Q. And you came back here. You had other experience and qualified as a mechanic?

A. Yes.

Q. You went into the Department service in April, 1924?

A. Yes, in the Forestry Branch.

Q. You were there as a mechanic?

A. Yes.

Q. And the duty of a mechanic is to keep the machines in order?

A. Yes.

Q. And it is limited to that?

A. Except at the time when we are assembling in the shops.

Q. Your work is mechanical?

A. Yes.

Q. Pure and simple, and you don't profess to be a forestry expert?

A. No, sir.

Q. Nor to have any knowledge of that branch of the service?

A. No.

Q. What were we wasting time about?

A. We all have a general knowledge.

Q. I know we all have opinions.

A. Not opinions. I mean we all know a little about the rest of the service.

## Notes on "Civil Aviation"

We don't interfere with it and have nothing to do with it.

Q. So you don't have opinions of value on anything but mechanical duties?

A. Yes.

Q. Since you left the service, you were organizing something?

A. I was endeavouring to organize a company to construct machines in Canada.

Q. That fell through, I believe.

A. No.

Q. You formed one?

A. It did not fall through.

Q. It has never gone through?

A. It may do.

CHAIRMAN: It may?

WITNESS: Yes.

Q. You are trying to organize a company to sell to the Forestry Branch?

A. No.

Q. Have you not tried to sell them a flying service?

A. No, sir.

Q. I have the correspondence here on that. Were you not negotiating with the president of the Curtis Company, or the vice-president, for a flying service?

A. To supply machines.

Q. And also a flying service?

A. Not for the Forestry Branch.

Q. Any branch?

A. Yes, the Federal Government.

Q. And you were trying to sell a flying service to them?

A. Yes.

Q. And you were telling the officers of the Curtis Company, you would get a flying service?

A. No, that was not gone into.

Q. Just for a minute now. Never mind the correspondence. You can hand that over if you like.

A. That was as far as it went.

Q. Did you tell one of the officers you could sell the Ontario Government a flying service per hour?

A. No, I said we might do eventually.

Q. That is one of your purposes now?

A. Not now. That is all washed out for the present.

Q. But you have still hopes of a flying service at so much per hour?

A. I am out of that now.

Q. What are you in?

A. As a matter of fact I have entered negotiations to go into business on my own.

Q. You have been negotiating ever since you left?

A. Every man has something to do. I have to live.

Q. And living involves negotiating and you have been negotiating ever since you left and one of the negotiations looked to the selling of a Curtis service to the Government?

A. Selling the machines.

Q. And also supplying a flying service?

A. That could not be done.

Q. You hoped it could?

I talked of the possibility.

Q. It just happened that you were introduced to Mr. Raney and these matters are before the Committee; otherwise you have done nothing. All right. Now your work at the Sault was work in the winter. You had been



## Notes on "Civil Aviation"

working in the shop?

I

A. Yes.

Q. Grinding valves and so on?

A. Yes. That is I was most of the time grinding valves.

CHAIRMAN: That is the principal part of the overhauling.

Q. I see; grinding valves, that was your job. Did you do anything else?

A. All kinds of work.

Q. There are experts' jobs around the shop, you did not do them?

A. I did a little.

Q. Is it not true that your work was physical work the grinding of valves?

A. Not all the time.

Q. Nearly all the time?

A. I did welding work and overhauling motors, once with a man named Sam McCaulay.

Q. But apart from that one occasion you were engaged in the grinding of valves?

A. I was not engaged in grinding valves.

Q. You were working at grinding valves? That was your occupation.

I believe you helped the carpenter a little?

A. I might have.

Q. I suppose they used men according to their ability?

A. Not according to ability.

Q. Not according to your ability.

MR. RANEY: Did you not hear him say that he was at Toronto University, and that all the flying men passed through his hands.

MR. FINLAYSON: Who were you under?

A. Gordon Hutt.

Q. Who was superintendent of the shop?

A. Mr. Thompson. Hutt was sub-foreman and Thompson, superintendent.

Q. And he put you to the work he thought you could do?

A. What he thought I should do.

Q. And he thought that you should grind valves and that other men should do the delicate work?

A. Yes.

Q. Now, you say you were offering some observations on the machines, on the Liberty engines?

A. Yes.

Q. Are they not the result of all the mechanical skill of North America?

A. Yes.

Q. And produced in enormous quantities?

A. Yes.

Q. They are the finest thing produced by the combined American shops?

A. By the combined engineers of the world.

Q. And the result of study of

A. All conditions.

Q. If you will listen for a minute, of all the American scientists who were directed to this work by the American government?

A. Yes.

Q. And is considered one of the finest machines in the world?

A. It was.

Q. And is still in use all over the world?

A. Yes.

Q. And it was produced in such quantities that there are still some in stock?

A. I don't know of any stocks. I believe they are hard to get.

Q. Hard to get?

## Notes on "Civil Aviation"

I think so.

Q. Don't you know that there are many still uncrated and being used for other devices?

A. They are all used stuff and, pardon me

Q. There are Liberty engines never uncrated

MR. RANEY: Let him give his evidence.

Q. And it is possible to replace engines?

A. Yes.

MEMBER: Is that new or overhauled?

WITNESS : Overhauled .

MR. FINLAYSON: New engines, never touched.

MR. RANEY: Witness says different.

WITNESS: We have not had any new ones.

MR. FINLAYSON: You don't know from general information. Liberty engines are being used all over the world?

WITNESS: No, sir.

Q. You say it is not?

A. It may be, but not to any general extent.

Q. The flying world?

A. They have got the engines and have to use them up.

Q. Do you know what the Liberty engine is worth new?

A. What they are supplied for I don't know.

Q. Supplied new?

A. Around \$12,000 or \$14,000.

MEMBER: Are you guessing at the prices?

WITNESS: Those engines were made in tremendous quantities.

Q. Have you any proof? You would not swear?

A. No, sir.

MEMBER: Then why do you say?

MR. FINLAYSON: As a matter of fact, he is miles out.

WITNESS : That is the price ruling to-day.

Q. Do you want to swear to production prices?

A. No.

Q. Let us test the man. You said \$12,000. Now do you swear to that?

A. I didn't swear. I said I imagined they cost about \$12,000.

Q. \$18,000 is the exact price.

A. Well then, if they cost that, \$12,000 is a reasonable price to-day.

CHAIRMAN: Just a minute. Don't get making mistakes in the evidence.

The evidence you gave to Mr. Finlayson was that they cost so much under mass production, about \$12,000, and used engines about \$2,000.

WITNESS: That is what I did say and you remind me I should not say, "I understand."

MR. GRAVES: I should like to ask this question. Is this an investigation make inquiries concerning supposed irregularities of a Minister who resigned or is it an investigation into the inefficiency of some particular man or department. At this rate, we will be here for ever. I thought this was an investigation of a Minister who resigned.

CHAIRMAN: Mr. Graves, that is not quite correct. It was an inquiry Mr. Lyons asked. This is a man Mr. Raney brought before the Committee, with a couple of witnesses we called, and we were not told what they were going to be

MR. RANEY: I said, I was going to confine myself to matters before the Committee, but Mr. Finlayson took Mr. Lyons over the air service and a lot of other branches and in consequence of what Mr. Lyons said about flying cost being forty odd dollars and as the witness said he told about the change in the oiling system I thought he was entitled to tell the Committee.

MR. FINLAYSON: Mr. Raney has made a statement absolutely misleading. He knows his questions put on the order paper in Mr. Kemp's name were directed

## Notes on "Civil Aviation"

on the aerodrome contract. You said that was what you wanted to investigate and questions were directed at the "enormous" expense and it was necessary to say something in explanation of why that investment was made and Mr. Lyons went into the aerial patrol work to show the enormous saving and the cutting down of operating expense.

MR. RANEY: For goodness sake, go on with the cross-examination.

MR. FINLAYSON: Are you going to withdraw?

MR. RANEY: No, go on.

MR. FINLAYSON: You said that \$11,000 was the cost of the Liberty engine?

A. Yes.

Q. Is that wild guess?

A. Not exactly wild.

Q. When the total was \$18,000?

A. \$12,000 was my suspicion.

CHAIRMAN: Your estimate?

WITNESS: Yes.

Q. You are only out the difference between \$12,000 and \$18,000. You went on to say something about \$5,500

A. I never said \$5,500.

Q. Did you not say that overhauled engines were \$5,500?

A. I said around \$2,000.

CHAIRMAN: That is right.

Q. Was the \$2,000 a guess?

A. On the Liberty engine?

Q. On the value now. That is the particular engine in the service?

A. Yes.

Q. Do you think they could be bought for \$5,000?

A. No, I said the engines we got.

CHAIRMAN: These were the kind we got.

WITNESS: Not purchased new.

MR. FINLAYSON: What does your \$2,000 mean, second-hand engines?

A. Yes.

Q. What would you say a new Liberty engine could be bought for?

A. I would not say.

Q. Of course. Perhaps you are wise. You say a Liberty engine is not suitable for this purpose?

A. I didn't say that.

Q. You agree it is?

A. It is a suitable engine for this particular body.

Q. And those particular bodies are not suitable?

A. Those particular bodies give good service for what they are.

Q. You said a four times smaller size was required?

A. I said they could get a machine more suitable for forestry patrol.

Q. What kind do you suggest?

A. I suggest a small type of seaplane.

Q. Such as what?

Q. Had you had experience with the H.S. 2 L's, Liberty engines?

A. Certainly.

Q. Where?

A. In the Canadian Air Force.

Q. Where was the station?

A. At Camp Borden.

Q. Flying boats with Liberty engines?

A. I was doing the same work there.

Q. Were you ever operating H.S. 2 L's with Liberty engines?

A. I was in the repair shop.

Q. You formed some novel theories there and did you tell Captain Maxwell

## Notes on "Civil Aviation"

this was not right?

A. He would not give me the opportunity.

Q. You could parade to the O.C.?

A. He would not see me.

Q. When did you try?

A. When I got to the Sault.

Q. After the trouble?

A. Yes.

Q. But when the work started, Captain Maxwell would see you?

A. Yes. And previously, I saw Hutt to make an appointment, and you yourself told me to see him at Toronto and I didn't see you and

Q. Briggs. You started a moment ago to try and say something, that you could never see Captain Maxwell; that is not right?

A. I tried to see him.

Q. You stated a moment ago that you tried to see him after your discharge and he would not see you. That is not right.

A. I stated that I tried several times and never saw him and sent a letter to the Minister.

Q. When you had this theory about the Laurentide people and the people at the aerodrome being all wrong and a mechanic right, who did you tell?

A. It was talk all over the shop.

Q. Who did you tell?

A. I said to Thompson that it would never work.

Q. How long had it been working before that?

A. On two machines that collapsed the same way.

Q. Do you know this or are you only guessing?

A. One collapsed in the bush.

Q. Do you know this?

A. Certainly, I saw the engine.

Q. The engine may have collapsed from a thousand causes. You were not on it? I am told it was valve trouble. You thought they were making a mistake and still think so?

A. I don't think so. I am sure.

MR. RANEY: Were not the crankshafts all changed back?

MR. FINLAYSON: No.

WITNESS: They were being changed when I was at the Sault.

MR. FINLAYSON: You state, "A change was made at the commencement of the season in the oiling system, that has already resulted in a few engines being entirely written off." Is that correct?

A. Yes.

Q. You say "entirely written off." Will you swear to that?

A. Yes. There was a little salvage on the engine.

Q. Which engine?

A. The one I had.

Q. The one they said you let get dirty?

A. No the one that crashed.

CHAIRMAN : He means the engine of which the connecting rod

Q. The whole engine gone?

A. With a little salvage.

Q. What do you mean little?

A. A few cylinders would be saved.

Q. How many cylinders are there?

A. Twelve.

Q. How many destroyed?

A. Three.

Q. Nine saved out of twelve, 75 per cent.?

A. No, they were not all good.

Q. You said three gone?

## Notes on "Civil Aviation"

A. Three gone and several others warped with the heat.  
Q. What did they do with them?  
A. I don't know.  
Q. That is the trouble; you don't know.  
CHAIRMAN: You say they were warped so as to be unfit to use?  
A. I was in the shop when they put the test guage on them. They were badly split.  
MR. FINLAYSON: What was the trouble?  
A. What trouble?  
Q. The engine trouble?  
A. The trouble was that the oil ceased to flow and the bearings seized.  
Q. How would the heat warp the cylinder?  
A. That is just what would warp it.  
Q. We will let your mechanic's opinion go against my legal opinion.  
How many other engines were written off?  
A. That was not written off? There was a little salvage. Three cylinders went and the crankshaft.  
Q. The cylinders are only a small item, the bearings, the crankcase how much are they worth?  
A. I don't know.  
Q. The crankcase, anything else?  
A. Lots of nuts, connecting rods.  
Q. They are not very heavy items?  
A. One hundred dollars, I guess. Am I right Captain?  
MR. FINLAYSON: He says you are nowhere near it.  
WITNESS: I am not speaking of prices. I said the engine was written off with the exception of a little salvage.  
Q. And you are not quite right. You don't know the prices of the parts, that is not your business?  
A. I have quite a knowledge of prices.  
Q. Well what are they?  
A. Bearings would cost \$8 each ; seven of those.  
Q. Where are the rest of the many engines written off?  
A. In the Sault.  
Q. How many?  
A. Five in the Sault when I got there.  
Q. What do you know about them?  
A. I saw them all.  
Q. What about them?  
A. Bearings gone; most of the crankshafts damaged.  
Q. "None with this alteration has attained eighty hours of flying time." That is false?  
A. No.  
Q. Let us examine it. Do you want to swear that none with this alteration attained eighty hours of flying time?  
A. I stated that to Captain Maxwell and he said that four or five had attained eighty hours.  
Q. Then it is false?  
A. He did not prove it to me. I saw the engines.  
Q. Your word as a mechanic would be confined to what you saw in the shops?  
A. And what I saw  
Q. When you were grinding valves you didn't see much?  
A. I was not grinding on this occasion.  
Q. Do you know Number 1791 engine?  
A. I cannot remember the number right off.  
MR. RANEY: Let me see the report made. You are not using it now.  
MR. FINLAYSON: I am using it. Engine 1791; do you remember that?

## Notes on "Civil Aviation"

WITNESS: I cannot say I do.

MR. CALLAN: Is that the serial number?

MR. FINLAYSON: Yes. It did ninety-two hours and thirty-five minutes.

What do you say as to that?

WITNESS: I don't know the engine.

Q. You say none did eighty hours? What about 4188?

A. I don't know the numbers.

Q. That did 100 hours and five minutes.

A. What machine was that?

Q. That was machine "M."

A. Those engines are not supposed to do more than eighty.

Q. You say none of them did it?

A. You say you have reached 100? I am entitled to ask a question.

They should not stay out that long in the service.

Q. Suppose they did. You say they should not. You told the Minister that none of the altered engines did eighty hours. Just a minute. I am pointing out here one that did 100.

A. Maybe they had a good engineer.

Q. I suppose some men can grind valves better than others? Some become experts?

A. Yes.

Q. Some day you may attain to that?

MR. RANEY: I don't think Mr. Finlayson need be so insulting. Witness has done magnificent service for this country and there is no reason why, if he comes here, he should not be treated as a gentleman.

MR. FINLAYSON: Here is a man who made a statement to the Minister in a letter which apparently started the trouble. He made a testament there and he swore to it and I want to examine him.

MR. CALLAN: What date was the letter?

WITNESS: August 24th, 1925.

MR. CALLAN: What date of the record would that be?

MR. FINLAYSON: September, 1925.

CHAIRMAN: I think it is obnoxious to all the members of the Committee, we have got several important inquiries and we have wasted a whole morning on the witness and I don't think any member would say that there is anything in the whole thing.

MR. FINLAYSON: I want to see how honest the man is.

MR. RANEY: I asked Mr. Finlayson to let me see the Government report and he would not, so I may have to recall him.

CHAIRMAN: I understand Mr. Raney asked a moment ago.

MR. FINLAYSON: Come and look at it.

CHAIRMAN: I suggest in connection with that, I don't want to criticize, and we have not stopped the bringing of witnesses, I think a member who summonses witnesses should make sure there is something in what a man will say.

MR. RANEY: Indeed there is something in what this man says.

MR. FINLAYSON: Let us finish it then. Now do you still want to swear to this statement, "None with this alteration has attained eighty hours flying time"?

A. I do wish to substantiate all that letter except there might have been two

CHAIRMAN: Mr. Briggs, look, be reasonably fair. Don't get into something

WITNESS: When I was in the shop after coming from Orient Bay nine engines were shown, me smashed up the same way.

MR. FINLAYSON: Let us get this statement. You still want to swear that none of these machines with this alteration attained eighty hours?

WITNESS: Yes.

## Notes on "Civil Aviation"

Q. You swear that?

A. With the exception of

Q. No, no.

CHAIRMAN: Do you know?

WITNESS: No.

MR. FINLAYSON: Then why do you swear?

MR. RANEY: He is not satisfied he is mistaken.

MR. CALLAN: I am sitting here and want to get the facts. This man, I understand, has made a statement to the Minister that none of the engines went over eighty hours of flying time. Now what proof have you that none of them did outside the engine you went on?

WITNESS: I just admitted there may be an exception.

CHAIRMAN: He admitted he does not know.

MR. CALLAN: What proof have you?

WITNESS: I was on one machine myself.

MR. CALLAN: What about the others?

WITNESS: The other machines, I saw the engines in the shop. I saw the engines personally.

MR. CALLAN: My question is not answered.

WITNESS: I said none had attained eighty hours of flying.

MR. CALLAN: Who keeps this record? Is it the mechanic on the machine?

WITNESS: Yes, on the machine.

MR. CALLAN: But you were only on one? More than...

WITNESS: On two.

MR. CALLAN: It is on the word of the mechanics running the other machines? They told you?

WITNESS: Yes.

MR. FINLAYSON: I have given 1791 Machine K which attained 92.35 hours; 4188, Machine M, 100.05 wrong in that?

WITNESS: That is two.

Q. You were wrong in those?

A. I won't swear I am wrong.

Q. Why did you make the statement to the Minister?

A. Why did you make the report?

MR. LYONS: I am satisfied to let this remain until we bring the records from the Sault as this man's statements are ridiculous and I am not going to stand for these wild, bombastic statements, if in doing it it takes a whole week.

MR. CALLAN: In this connection does every pilot of every machine file with the head of the Department a record of the flying hours?

MR. FINLAYSON: Yes.

MR. CALLAN: Is that kept on record.

CAPTAIN MAXWELL: Yes. There are records of the pilot, the superintendent and the director since the first of these machines flew for the Government.

MR. CALLAN: Have you that record?

CAPTAIN MAXWELL: Yes.

MR. CALLAN: Can it be brought?

CAPTAIN MAXWELL: Yes, sir.

WITNESS: There is also an engineer's record on each boat and there is a copy kept on file in Captain Maxwell's office.

MR. FINLAYSON: Take engine 222, Machine I, which flew ninety-six hours after this alteration?

WITNESS: You are wrong there no. Yes.

MR. FINLAYSON: Number 380, Machine E, 89.5 hours after the alteration? That is four?

WITNESS: Yes.

MR. FINLAYSON: Number 2662, Machine F, 95.25 hours?

WITNESS: Yes.

## Notes on "Civil Aviation"

MR. CALLAN: I understand that you are not getting witness to say he knows those specific numbers?

MR. FINLAYSON: He knows how they are kept.

MR. CALLAN: It would be impossible to remember those numbers.

CHAIRMAN: It is a record of the director of a number of flying cases after the alteration. They can be verified by oath.

WITNESS: It depends on the next engine whether I can remember right or not.

MR. FINLAYSON: Engine 2662, Machine F, 95.25 hours?

WITNESS: Yes.

Q. Engine 471, Machine A, 93.33 hours?

A. Well, nine engines I saw.

Q. Have you reason to doubt this statement?

A. Yes, I have. I saw nine engines out in the shop and they (end of sentence lost, through noise).

MR. RA.NEY: They were what?

WITNESS: All smashed up. Here Mr. Finlayson says there are six installed machines did over eighty hours. We didn't have that many machines in operation.

MR. FINLAYSON: What do you mean smashed up?

WITNESS: Bearings burned up.

Q. How many lost last year?

A. I saw nine.

Q. The truth is they only lost four. Do you know the difference between a major and minor accident?

A. Yes.

Q. When you say there were nine major breaks you are wrong?

A. No.

Q. All right. Engine 101, Machine J, eighty-six hours and five minutes; 2674, Machine L, eighty hours and ten minutes; 2901, Machine S, eighty hours and twenty-five minutes; 151, Machine R, seventy-seven hours and twenty-five minutes; 2194, Machine A, seventy-four hours and five minutes; 181, Machine N, seventy-seven hours and five minutes; 1791, K, ninety-two hours and thirtyfive minutes; 2264, Machine G, fifty-three hours fifty minutes.

WITNESS: At the end of those fifty hours, what happened to them?

MR. FINLAYSON: It was removed to replace for heavy gears, and seventyseven and seventy-four removed because of shortage of work in the reconditioning shop. Eighty hours is considered good normal flying service?

A. Yes.

Q. Under normal conditions at the end of eighty hours it should be turned in for repairs?

A. For reconditioning.

Q. Whether there has been an accident or not?

A. Yes.

Q. It depends on the exigencies of the service, some may be out longer and some have to come in?

A. They endeavour to take them out at the end of eighty hours.

Q. They ran seventy-seven to 100?

A. My engine did not run seventy-seven.

Q. I am trying to test your statement: none attained eighty hours of flying service.

MR. CALLAN : Do I understand the record is of the maximum flying hours?

MR. FINLAYSON: Not the maximum. Every one is supposed to go in at the end of eighty hours.

MR. CALLAN: Are those the ones that attained the maximum?

MR. FINLAYSON: Those are the whole lot.

MR. CALLAN: In the service?

MR. FINLAYSON: That cover his description.



## Notes on "Civil Aviation"

MR. RANEY: How many machines are there?

MR. FINLAYSON: Fourteen.

MR. RANEY: There were nine you say, wrecked?

MR. FINLAYSON: He says that.

WITNESS: I didn't say they were wrecked.

MR. FINLAYSON: He is just talking.

WITNESS: I am not just talking.

MR. FINLAYSON: Is it not true your statement is all wrong?

A. No.

Q. You still stick to it?

A. These machines were brought in for conditioning

Q. You are not entirely stupid. Try and get away from that. Compose your mind for a minute and listen. Here you state that none with this alteration has attained eighty hours of flying service?

A. That was August 24th.

Q. And this report is the following week. Do you still stick to that?

A. Yes.

Q. And you state this report is false?

A. I have not seen it.

Q. I will show it to you.

A. Mr. Finlayson, on that date, August 24th, when I wrote that letter, were there machines that had attained eighty hours?

Q. Those are the hours.

MR. RANEY: At that date?

MR. FINLAYSON: Yes. September 4th. Your letter was at the end of August and this refers to the beginning of September. The Minister was trying to find out if the letter was reliable or not.

WITNESS: I was on the O.G. machine.

CAPTAIN MAXWELL: What year?

WITNESS: Last year, at Orient Bay. It was not removed for heavy gears. It was smashed up.

CAPTAIN MAXWELL: This record is taken from the engine record of competent air engineers.

MR. CALLAN: This witness is on oath and is twenty-one years of age. He has come here and I want to hear his evidence.

MR. FINLAYSON: Do you still want to swear to that?

WITNESS : I have the record of that.

MR. RANEY: You have the record at your house?

WITNESS: Downtown.

MR. RANEY: And it does not accord with the report?

MR. FINLAYSON: The engine he mentions did not fly eighty hours. We don't contend it did.

WITNESS: That engine is shown as taken out for heavy gears. It crashed from want of oil. O.G., that is my machine.

MR. FINLAYSON: There are thirteen machines from seventy-seven to 100 hours and I am asking you if you swear this is false? Answer the question.

A. I cannot answer the question. The first machine

Q. Never mind that. The question ignores the first machine.

A. Then you mean ignore the whole report?

Q. Please answer this question. Ignore the first machine, which did not do anything like that.

A. It crashed and

Q. You will answer the question if I have to get an order from the House.

Ignore the first machine. I say there are twelve others which did from seventyseven to 100 hours, all of which, I am told, had this alteration.

A. Yes.

Q. Do you contradict that?

A. That they all had the alteration?

## Notes on "Civil Aviation"

Q. No. I did not ask you that. Listen. Ignore the first machine. I say there are twelve others which, having this alteration, did from seventy-seven to 100 hours of flying service.

Yes. Not all over eighty.

Q. Do you contradict that?

A. No.

Q. Then your statement is wrong?

A. No.

CHAIRMAN: You don't realize the significance. You state to the Minister that none of these machines, changed in this manner, had eighty hours of flying service. In view of this report, which you accept, do you want to swear to that?

WITNESS: In view of that report I didn't then say so

MR. RANEY: If the report is true you are wrong? You impugn the report?

WITNESS: I take back what I put in that letter.

MR. RANEY: Let us see what the report says about the engine that crashed

WITNESS : That was taken out to change heavy gears.

MR. RANEY: Was that true?

WITNESS : No.

MR. RANEY: 2264, G.C.A.O.G., that was your engine?

WITNESS: Yes.

MR. CALLAN: Was that your engine?

WITNESS: Yes. That was the number. It was not removed to replace heavy gears though.

MR. RANEY: If this is false, perhaps-others are.

MR. FINLAYSON: Do you know the number of your engine?

WITNESS: No. I know the number G, flown by George Oakes at Orient Bay.

MR. FINLAYSON: This report was prepared from records at the Sault and you want to withdraw?

WITNESS: I want to withdraw it in parts of the report only.

MR. KEITH: You have no doubt about its correctness?

WITNESS: That simply shows the machine I was in

MR. FINLAYSON: The hours of twelve flying machines ran from seventyseven to 100 hours. You don't doubt that, Mr. Keith says?

WITNESS: I will grant you that.

MR. CALLAN: Had all those machines the changed oiling system?

MR. FINLAYSON: Yes, all.

WITNESS: Some crashed from that cause.

MR. FINLAYSON: You may have that opinion. You said none of them did eighty hours?

WITNESS: You make the difference between one and some of them.

MR. FINLAYSON: I suppose this is true: When you were wrong in that your information was not more reliable on the rest of your statements?

WITNESS: My information, Mr. Finlayson, is what I saw.

MR. FINLAYSON: You did not see them all, yet you state: None with :his alteration achieved eighty hours of flying service.

WITNESS! I have already disposed of that.

MR. FINLAYSON: Well, I have not.

WITNESS : I want to withdraw to this extent only that you want to point >ut that none of the engines crashed instead of a few.

MR. CALLAN: You say there is a possibility that the official report of the Department may be wrong?

WITNESS: Yes.

MR. FINLAYSON: There is a possibility. There always is.

MR. CALLAN: I believe there is.

MR. KEITH: In answer to my question he said he did not doubt the correctness.

## Notes on "Civil Aviation"

WITNESS: It is incorrect.

MR. KEITH: About the twelve machines?

MR. RANEY: How long are we going to sit?

CHAIRMAN: I was hoping we were going to clear up this matter. What about another session to-day?

MR. FINLAYSON: This witness can be recalled again but. Captain Maxwell wants to get away and Mr. Squire is leaving at 5 o'clock.

MR. RANEY: I have to be in the House.

MR. FINLAYSON: I should like Captain Maxwell to get away.

William Roy Maxwell sworn. Examined by Mr. Finlayson.

Q. What is your position?

A. Director of the Ontario Government Air Service.

Q. How long have you been flying?

A. Since 1916.

Q. In the?

A. In the R.F.C., in the R.A.F. and in the R.C.A.F. and merchant.

Q. In four branches?

A. In four branches.

Q. Have you covered all branches of the service?

MR. RANEY: Everybody knows his qualifications.

CHAIRMAN : I think he is an acknowledged expert.

MR. FINLAYSON: Get down to your own service and this man's complaint.

He was under Thompson?

A. Yes, Thompson is the general superintendent.

Q. He was under him?

A. Yes.

Q. What branch?

A. He is in charge of the re-conditioning at Sault Ste. Marie.

Q. Mechanical repair?

A. Yes.

Q. Is he a capable man?

A. He is a very competent, capable man, I understand, in mechanics and theory in so far as aircraft and engines are concerned.

Q. In 1924 there was some trouble with Briggs?

MR. RANEY: Cannot you refer to Mr. Briggs?

A. He came to me with an application for work respecting the H.S. 2 L's and showed his credentials. I saw he had an excellent war record and I was favourably impressed. I took him on ; in fact an advance was made as I understood he was up against it, to carry him through until he started work. The first mishap with Briggs happened when Kelly damaged the bottom of his boat so that it leaked. The machine was brought on the shore to repair the bottom. Briggs, who I will say did not have a large experience on active flying operations in the shops, yes, but operations, no carelessly left his coat on the flying wires and when the engine was started it was sucked into the propeller and destroyed the propeller. A report came in but, as I said before, I felt Briggs had ability and he was not a young fellow, and I thought we should not jump at conclusions. I went personally to the lake, put on the propellor and flew the machine and Briggs back to Sudbury. That apparently started the trouble with Thompson.

Q. When was that?

A. In the season of 1924.

MR. RANEY: With whom?

WITNESS: With Major Thompson. Major Thompson will not tolerate carelessness. I think it is possible that is where the trouble started.

MR. FINLAYSON: Is that what he discharged him for?

A. Not that time. Thompson classified that as carelessness. During that season I received a confidential report from him and so on. I even had Briggs in mind as shop foreman in 1924. I went through the season and in October I wrote for a report off the man Rouse and asked him to give me in

## Notes on "Civil Aviation"

writing his personal report of all the air engineers we had in the service. That is the first letter on file.

MR. CALLAN: Who is Rouse?

A. Rouse is the man in charge of the Sudbury station, a mechanic, and really in charge of the mechanical work in so far as the engines are concerned of the Provincial Air Service. He did not measure up and was reduced. He could not handle men. He is a very good mechanic.

MR. FINLAYSON: We don't want to reflect on other people. \Ve don't want to introduce names that may give a left-handed swipe on someone else. I am not referring to this man, who has presented himself.

WITNESS: It went on until I had a report from Thompson that Brigg's machine was in a filthy condition the machine, not the engine. It was in a filthy, oily condition and a machine like that does not function as well as it should. In other words, if it is plastered with oil and grease it cannot climb, it cannot perform.

MR. CALLAN: When was that?

WITNESS: In the fall of 1924.

CHAIRMAN: It is part of the duty of the mechanic to keep the machine as well as the engine clean?

WITNESS: The machine is that apart from the power. The engine is the engine. The duty of the mechanic is to keep the machine air-worthy. We have classified them as air engineers instead of mechanics because they have passed examinations presented to, and approved by, the Controller of Civil Aviation at Ottawa. It is in connection with engines and aircraft and they must know how to draw up and rig a machine; know the chief aeronautical terms, and so on. The air engineer keeps the engine ready for flight and the machine ready for flight. Thompson on inspection of his machine found it was terribly dirty. He communicated with me and I said it might not be his fault and that his time had been devoted to something else which would not permit him to take care of the boat, and I believe that inquiry showed this was the case. Briggs had been discharged, but I asked Thompson to reinstate him and he did. Then in 1925 I had several complaints, verbal complaints, from Thompson about Mr. Briggs and it blew up at Orient Bay when I got a series of telegrams about the condition of affairs there with regard to engines and Briggs' refusal to comply with instructions of the general superintendent. If I place a superintendent in a position I have faith in him and naturally what he says should mean something. Briggs refused to come out at the correct time for operations and Thompson dismissed him and I backed Thompson up. That is the story.

MR. FINLAYSON: That is the personal end. What about his complaint of the change made in the oiling system?

WITNESS: If I may, I will be as brief as I can. Mr. Briggs said that if these holes were blocked on the outside no oil would go to the bearings. But even after two years' service in the Laurentide Air Service where this condition

was maintained on every engine in the service he says the engines would seize up

MR. FINLAYSON: Did the Laurentide service adopt this?

WITNESS: It was the idea of Vauchon, an air engineer. His theory, I am not an air engineer so I quote the consensus of opinion in the air service, was that if the holes in the crankshaft were put in the other side the sediment would not be thrown to the bearings thus causing additional friction. Now this system was used in the Laurentide and in 1924 by the Provincial Air Service, this system of oiling.

MR. CALLAN: In that connection Mr. Briggs stated that that oil was filtered and there would be no solid matter. You make the statement that it would throw sediment.

WITNESS: It is true it is filtered but regardless of that there is a certain amount of sediment collects after it has come through the strainer. As previously stated, I am not an air engineer and it is an air engineer's duty the overhaul and reconditioning.

## Notes on "Civil Aviation"

MR. FINLAYSON: As I understand the Laurentide had made this change?

WITNESS: And I had flown machines with the change.

Q. With no trouble?

A. With no trouble.

Q. It was not entirely new?

A. Oh no. Machines were delivered to the Provincial Air Service with this change.

MR. CALLAN: That had been in operation?

WITNESS: Yes, from the point of delivery to Sudbury. They were new engines.

MR. CALLAN: How far is that?

WITNESS: About 400 or 500 miles.

CHAIRMAN: Some were delivered with this system in operation?

WITNESS: Yes.

MR. CALLAN: How long is a flight of 400 or 500 miles?

WITNESS: It depends on the weather. I would say that average time runs at seventy to seventy-five miles per hour.

MR. FINLAYSON: He made no complaint in the spring about the work?

A. No complaint was made to me.

Q. Is his statement to the Minister correct: the change was made at the commencement of the season?

A. Does he refer to 1924 or 1925?

MR. RANEY: In between the two seasons.

A. We carried on the same oiling conditions.

MR. FINLAYSON: In 1924 and 1925 the same?

WITNESS: Yes, some of the engines from the Laurentide came to us in that condition.

CHAIRMAN: It was not a radical departure in the air service?

WITNESS: No. It was a change recommended by the Laurentide Air engineer, Vauchon.

MR. FINLAYSON: This statement that none of the engines attained eighty hours of flying service?

WITNESS: That is entirely untrue. I am satisfied that the engines in the report flew more.

Q. The twelve machines that I read to him?

Yes.

Q. They achieved from seventy-seven to 100 hours of flying service?

A. Yes, sir.

Q. And all had been altered?

A. All had been altered. I saw the man who supplied the list of numbers and actual flying times of the engines which had been modified to furnish the statement in connection with Mr. Briggs' letter.

Q. He says that himself and others warned against this?

A. I will read a statement about that: "Meeting held in the office of W. R. Maxwell at Sault Ste. Marie at 11.30 A.M., Monday, August 31st.

"The following air engineers were present: T. Woodside, G. R. Hutt, A. E. Hutt, W. G. Chapman, S. McCauley, W. J. Gill, W. G. Thompson, J. C. Rouse and R. H. Eraser.

"The following questions and answers were put to the above-mentioned air engineers:

"Did you hear Mr. Briggs warn against certain alterations being made to engines?

"Answer: Everybody answered, 'No.'

"Did he oppose this and other dangerous methods of change?

"Answer: Everybody answered, 'No.'

"Did he warn against this alteration (oiling system) at the time it was made?

"Answer: Everybody answered, 'No.'

"Did any of you boys hear Mr. Briggs remarks that G. A. Thompson

## Notes on "Civil Aviation"

stated that unless he (Briggs) was fired, he would resign.

"Answer: Yes, George Doan."

Those are the questions I applied to these air engineers after this trouble.

MR. CALLAN: After the previous witness was discharged?

WITNESS: Yes.

MR. CALLAN: Don't you think there is a possibility in connection with calling these other employees in connection with an investigation that they would be prompted not to tell for fear it would be detrimental to themselves?

WITNESS: I would not say so. The boys of the Provincial Air Service are a very honourable lot, and our success so far may be attributed to an outspoken statement of conditions and facts.

CHAIRMAN: In your system of organization you welcome suggestions from the air engineers?

WITNESS: Absolutely. That is what we ask.

MR. CALLAN: I am not a legal man. Assuming that some of the men at the investigation had given answers contrary to that and assuming, on the strength of that, that you had discharged them, is the field very wide for employment in that same class of service in Canada?

WITNESS: As far as air engineers are concerned?

MR. CALLAN: Yes.

WITNESS: Right now, yes. Possibly not so great then. I say they all love the Service and aim to build up the Service in the Province. They were never nervous about overtime. They would be on the job from seven to twelve every night and

MR. RANEY: Mr. Callan, you will notice I am not objecting to the reading of this letter. I am not making a technical objection, but I want to ask who was there to investigate?

WITNESS: I was at the Sault.

MR. RANEY: And you called the engineers into a conference to investigate?

WITNESS: When I received a copy of the letter I called the man in to investigate.

MR. RANEY: Mr. Briggs was there at the time this conference was called?

WITNESS: I don't know.

MR. RANEY: Yes. He did not leave until September. He was in the aerodrome, working in the shop, working out his month. Did you call him in?

WITNESS: I don't recollect him.

MR. RANEY: Did you ask him anything about this matter? Did you ask him anything about the inquiry?

WITNESS: No, he had made a statement to the Minister.

MR. RANEY: You were conducting an inquiry?

WITNESS: I was asking questions.

MR. RANEY: You did not ask him in front of the other men?

WITNESS : No.

MR. RANEY: You worked in his absence?

WITNESS: Certainly I did.

MR. RANEY: From one answer you discovered that Thompson had a strong feeling against him: "Did any of you boys hear Mr. Briggs remark that G. A. Thompson stated that unless he (Briggs) was fired, he would resign?"

WITNESS: I asked the question and George Doan answered "Yes."

MR. RANEY: If that statement was made there was indication of strong feeling by Thompson against Briggs?

WITNESS: I was trying to find out if there was prejudice.

MR. RANEY: That would indicate prejudice?

WITNESS : I would not say.

MR. RANEY: Unless Briggs was discharged he would resign that would indicate prejudice against Briggs by Major Thompson?

CHAIRMAN: I would not say so.

CHAIRMAN: In connection with that, I understand from the evidence

## Notes on "Civil Aviation"

brought out that Mr. Thompson had taken strong ground that Briggs should be discharged.

MR. RANEY: Quite so. Thompson had recommended Briggs for discharge the previous year on account of the coat incident. You had used superior authority to keep Briggs in place?

WITNESS: In view of the facts of the case.

MR. RANEY: You have heard to-day an explanation that Briggs gave and what happened on the morning that he was notified of his discharge. He had been working two nights before and was five minutes late in turning out for operations and because of that he was told he was discharged.

A. That is Briggs' story. Thompson has a different story.

Q. Assuming Briggs' story is true would that be a reasonable ground for Thompson to take?

A. Certainly not, if he had worked overtime all night; that would not be fair.

Q. I quite agree you must work on the report of the superintendent, unless you find there are reasons to doubt him and it is a difficult thing to override a superintendent when he recommends a man for discharge. He knows he is being over-ridden. But if the facts were as stated Thompson was doing Briggs an injustice?

A. As Briggs states it he was.

Q. As he had previously on the other machine, you came to that conclusion? Over the telephone.

Q. Let me ask you, did you know Briggs at all before this time?

A. The first time was when he applied for a position.

Q. You knew that he had been in charge of engine instruction at the University over all the men?

A. Captain Fisher was in charge and Mr. Briggs was an N.C.O. under his instruction.

Q. He was in charge practically, is that it?

MR. FINLAYSON: No; one was an N.C.O. and the other the officer in charge.

CHAIRMAN: We are not wanting to deprecate Mr. Briggs' knowledge, but there was an officer in charge in all these cases. I would like that to go on record unless we have official evidence to the contrary. He was only nominally in charge.

MR. RANEY: Officially in charge?

MR. FINLAYSON: The officer was officially in charge.

CHAIRMAN: It is like having a superintendent and under him a foreman.

MR. RANEY: You had no doubt as to his capability?

WITNESS: No.

Q. You knew he had done important service over here in connection with the air service?

A. It was shown to me in writing from his recommendations.

Q. And from the age of eighteen until the time you took him, when he was past forty-two or forty-three his whole life had been devoted to gasoline engines?

A. He told me that.

Q. I suppose he gave a record of his experience?

A. He did. I had it with me in the office before we started.

Q. Can you think of a more thorough record to qualify a man for this kind of work in regard to assuming he was a man for these engines?

A. It should be a necessary inference.

Q. Eminently so?

A. Yes.

Q. Now coming down to the conference had it not occurred to you that you ought to see Briggs at that time?

A. No. He had written to the Minister making statements which were

## Notes on "Civil Aviation"

false and I was immediately planning my defence.

Q. Was it really that?

A. I was supplying a true report.

Q. Were you looking at it from the view that he had gone over your head to the Minister? "We will see about that," was your point of view?

A. No. I did not mind that. It has been done before.

MR. CALLAN: The date of Mr. Briggs' letter and the date of this investigation how do they correspond?

MR. RANEY: The date of the letter from Briggs was 24th August. Just a week later. Come back to the changes on the machines. You are not disputing the fact that the oiling system in these Liberty engines not already changed were changed during the winter of 1924-25 at the airdrome at the Sault?

A. Yes, we changed them. The Laurentide started the change and those Inot

changed were changed

Q. How many did the Laurentide change?

A. I would not like to say.

Q. Maybe only two or three? How many were changed at the Sault?

A. I cannot say.

Q. The holes on the left-hand side were blocked and new holes opened on the right-hand side?

A. From the throw side to the inside.

Q. That would weaken the crankshaft?

A. No.

Q. Were all the engines at the Sault changed in that way the old holes blocked and new ones made?

A. I would necessarily have to consult the engine log books.

Q. Do you understand they were changed?

A. I understand all were to be changed.

Q. The evidence is that all were changed. Now how many of the engines changed in that way crashed?

A. If I may refer to ships as crashing and engines as major breaks, four in the season of 1924.

Q. You knew of four. Were these breakdowns brought on by the change in the oiling system?

A. That cannot be absolutely proved. It was thought from the condition of certain bearings when the machines came in for overhaul after eighty hours that the system employed was faulty.

Q. It was found that there had been a mistake in making these changes?

A. No, because they had the same trouble with the oil with the holes on the other side.

Q. Not the same trouble?

A. Absolutely.

Q. How many cases?

A. There are many cases in commercial flying.

Q. Was the change made back and the new holes blocked up?

A. We went back to the old system.

Q. When?

A. Long before Mr. Briggs ever reported to Sault Ste. Marie for dismissal.

Q. When?

A. In August.

Q. Before or after his notice of dismissal?

A. Before his notice of dismissal.

Q. The 5th of August. When did you decide to go back? Before the 5th of August?

A. I would not say until I see the record.

Q. I am not going to hold you so strictly as Mr. Finlayson did with Mr. Briggs because we all make statements that we afterwards have to qualify.



## Notes on "Civil Aviation"

I think even Mr. Finlayson will admit that.

MR. FINLAYSON: I don't make statements of oath more deliberately than without them.

MR. RANEY: We sometimes speak too quickly. I often do.

MR. FINLAYSON: I will shake hands on that and say we do frequently.

MR. RANEY: Open confession is good for the soul. About the time of the dismissal of Mr. Briggs you did come to the conclusion that this had been a mistake?

WITNESS: I don't swear to that. It is the consensus of opinion. I am not an air engineer.

Q. On the advice of the engineers?

Yes.

Q. At all events the views of the engineers were after the event; it was after this experience they thought they had made a mistake and had better get back?

CHAIRMAN: When you say that you worked on the consensus of opinion of air engineers you are applying that to your own engineers or generally?

WITNESS: That is relative strictly to our own air service.

MR. RANEY: Then you returned to the old system. Any trouble since?

WITNESS: Yes.

Q. Not as much though?

A. That is September, October, only two months' operation.

Q. Of course, Captain Maxwell, we all know that men in the Service, even superintendents make mistakes and act unjustly at times and get prejudiced.

Did you know that Captain Thompson had been one of the men who went through the instruction of Mr. Briggs while Briggs was at the University?

A. Major Thompson is an Englishman, having learned all his aircraft knowledge in England.

Q. He was passed got his papers through Mr. Briggs?

A. No, sir.

Q. You knew Briggs had papers as an air engineer from England?

A. I knew he had papers from England.

Q. You have no reason to doubt his qualifications?

A. No.

Q. Would you think it odd for a man with his qualifications to be cleaning and grinding valves?

A. I only go from the expression of opinion I received from the man in charge, written in October, 1924. That is at the top of the list. If you will refer to the letter.

Q. That has nothing to do

A. It says his ability was not such that he could be entrusted with fine work.

Q. Whose report was that?

A. From the shop foreman.

Q. Mr. Thompson?

A. No.

Q. From Mr. Thompson to you?

A. The signature will tell you from.

Q. Is not Thompson the man responsible?

A. Thompson was at operations in the field at that time. T. B. Kelly was acting superintendent.

MR. CALLAN: Did Mr. Thompson have charge of the department at that time?

WITNESS: At this time T. B. Kelly was acting superintendent and the report was sent by Rouse, the mechanical foreman.

CHAIRMAN: Was he under Thompson's orders?

WITNESS: Yes, but Thompson was in the field.

MR. RANEY: I see: "In reply to your letter, am enclosing report from Mr.

## Notes on "Civil Aviation"

Rouse on different members of the staff." Rouse was one of the engineers?

A. Shop foreman. Rouse has equal qualifications with Briggs. He was ten years with the Napier works in England.

Q. I see, "Briggs has made mistakes and I would not feel inclined to entrust him with particular work." He did not indicate the nature of the mistakes?

No. That is just his own opinion.

Q. And Rouse was one of the engineers who attended the conference?

A. If his name is down there.

Q. At that time was he an ordinary mechanic?

A. Air engineer in charge of the electrical equipment.

Q. What was that?

A. He was a step higher than an air engineer. He had charge of the electrical equipment.

Q. Is that his position still?

A. Yes, sir.

Q. No superiority over Mr. Briggs, but a little higher different qualifications on account of electrical experience?

A. Chief inspector.

Q. So that all these machines where the new holes had been drilled were brought back to the plan upon which they had been originally built. The old holes were re-opened and the new holes blocked?

A. We have even gone so far as to leave two holes in on each side.

Q. For experiment?

A. Yes, for experiment.

Q. You have opened up the holes you blocked?

A. And blocked up the holes we opened.

Q. Would that justify the attitude to Briggs?

A. Briggs comes back to the shop after these changes have been made and attempts to take credit for them.

Q. He made a warning?

A. He made no warning; no man made a warning.

Q. Just a minute, Captain Maxwell. Thompson was in charge of the shop?

A. He is the general superintendent.

Q. Thompson was inimical to Briggs. You knew that?

A. Well, he says not in the correspondence.

Q. You know he twice recommended dismissal without cause

MR. FINLAYSON: Not without cause.

MR. RANEY: Did you discuss the matter with Thompson?

MR. BRIGGS: I had three weeks argument with Thompson when Thompson came to Orient Bay.

MR. RANEY: Before the change was made did you warn Thompson against making this change?

MR. BRIGGS: I told him it would not work.

MR. RANEY: So it was Thompson who recommended the change?

CAPTAIN MAXWELL: No, sir. It was an air engineer named Vauchon.

MR. RANEY: He made the recommendation?

CAPTAIN MAXWELL: Absolutely.

MR. RANEY: And you took the responsibility of ordering it to be done on these machines?

CAPTAIN MAXWELL: Certainly not. They came to the Service like that.

MR. RANEY: But those which were changed at the Sault. Who gave instructions for those to be changed?

A. The air engineer in charge Gordon Hutt.

Q. You knew of the change?

A. Naturally.

MR. RANEY (To Mr. Briggs): Did you talk of the change with Hutt?

MR. BRIGGS: Yes.

MR. RANEY: And told him it would not work?

## Notes on "Civil Aviation"

MR. BRIGGS: Yes.  
MR. RANEY: And Thompson?  
MR. BRIGGS: Yes.  
MR. RANEY: Did you know Hutt was recommending the change?  
MR. BRIGGS: I knew he had Vauchon's idea.  
MR. RANEY: So Hutt approved?  
MR. BRIGGS: I didn't think he approved.  
Captain Maxwell re-examined by Mr. Finlayson.  
Q. Thompson is a competent, capable man?  
A. Absolutely.  
Q. He is in charge of this branch of the Service and you act on his recommendations?  
A.- When he suggested dismissal I backed my general superintendent up after the three causes for dismissal.  
MR. RANEY: After three recommendations for dismissal.  
CHAIRMAN : The facts speak for themselves.  
Q. Had the change anything to do with Briggs?  
A. Absolutely no.  
MR. CALLAN: This oil I understand is forced into the bearings, into the shaft. You understand that? What is the power used to force it in there? Is it motor driven?  
WITNESS : Yes, a disc with flanges.  
MR. CALLAN: Are there any indicators to show the pressure on the pipe from the pump to the bearings?  
WITNESS: Absolutely. And that is why the air engineer travels with the pilot. He has to keep an eye on the instruments. If you have trouble  
MR. CALLAN: Just a minute. Is the pulsation indicated?  
WITNESS : An instrument records the pressure, another records the temperature. If the temperature of the oil runs high  
MR. CALLAN: Where is the temperature taken from?  
MR. BRIGGS: From the end of the shaft.  
MR. CALLAN: Would that go dead?  
MR. BRIGGS: Yes.  
MR. CALLAN: You could not close off the engine then?  
MR. BRIGGS: We do, to glide.  
End of examination.  
CHAIRMAN: I understand Mr. Squire wants to get away.  
MR. SQUIRE: Perhaps Mr. G. Hogarth, who is Deputy-Minister of Public Works, would do or the chief engineer of our department?  
MR. RANEY: Very well.  
CHAIRMAN: In connection with that is there anything you want to tell the Committee?  
MR. SQUIRE: I think the whole story could be told in a two minutes.  
MR. RANEY: Then go ahead.  
CHAIRMAN : He did not say he wanted to tell it. The meeting is adjourned then until to-morrow.

CANADIAN AVIATION - 1927
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## "AIR ENGINEER RANKS"

Province of Ontario ref - provincial parliament returns

## Notes on "Civil Aviation"

1927 : British Air Ministry forms the "High Speed" Flight formed for research into speed and performance and to fly a specially built seaplane in the 1927 Schneider Trophy race in Venice. RAF's Napier engined Supermarine S.5 monoplane wins the 1927 Trophy at a speed of 281.65 mph

January 1927 : Work of the Lloyds Register - Aviation Department is dropped because of a lack of outside financial support. However, the work was carried forward by the British Corporation for Shipping which was approved to compile an International



This map shows how widespread are Great Britain's internal air activities.

Register of Commercial Aircraft in January 1927.

1927 : UK Air Ministry records indicate that "reconditioning" equated to 70% of the cost of a new aircraft between 1927 - 1931.

## Notes on "Civil Aviation"

UK : State owned "Civil Air Service" provider "Imperial Airways" purchases only UK designed and built aircraft, usually in small numbers of each type operated. (Douglas Co. USA estimated that the DC2 required a production run of 75 airframes to break even) UK-Air Ministry policy shifts to demand metal airframes about this period , and by mid '30s all airframes to be metal.

1927 : Last flight made from Seattle to Victoria by Eddie Hubbard in B-1 Seaplane. The B-1 covered 350,000 miles (563,000 kilometers) and required 6 engine changes between 1919 and 1927. B-1 currently on display at the Museum of History and Industry, Lake Union, Washington.

29 June 1927 : The Turnbull variable-pitch propeller tested on an Avro 504, Camp Borden, Ontario.

1927 : Beverley Shenstone travels to England on vacation, spends a few weeks placement (via Prof. John Parkin U. of T.) at the Science Museum, Kensington with a student group of an Air Ministry Laboratory. During this time he obtains student membership in Royal Aeronautical Society.

29 March 1927 : United States Dept. of Commerce - Aeronautics Branch issues first "Airworthiness - Type Certificate" : Buhl Airster CA-3.

06 April 1927 : individual "US States" issued pilots licenses made invalid. United States Dept. of Commerce - Aeronautics Branch issues first pilot's License in the USA. (was offered to Orville Wright, he declined)

May 1927 : Charles Lindbergh flies the *Spirit of St. Louis* on a successful 33.5 hr trans-atlantic crossing NY-Paris.

July 1927 : United States Dept. of Commerce - Aeronautics Branch issues first "Aircraft Mechanic License" in the United States.

2 July 1927 : Invited to celebrate Canada's 60th birthday by Canadian envoy to Washington, Vincent Massey, Charles Lindbergh arrives at Ottawa's Hunt Club Airfield and then flies the *Spirit of St. Louis over Canada's Parliament Buildings* accompanied by 12 USAAC Curtiss P-1 Hawk biplane fighters and three Royal Canadian Air Force aircraft.. 2 US aircraft collide during the landing - Lieutenant John Thaddeus Johnson, is killed when he jumps from less than 100 feet and tries to use his parachute. While the crash was regretful, the fly-over moved the Government of Canada to begin the Flying Club "scheme" (Programme) to ensure controlled and regulated flight instruction.

1927 : Department of Defence technical training "scheme" (Programme) officially started to supply skilled tradesmen to the Canadian Air Force.

1927 : Opposition to the RCAF carrying out civil air operation comes to a head in Parliament.

08 June 1927: variable-pitch propeller designed by Rupert Turnbull is tested at camp Borden, Ontario on an Avro 504 by Royal Canadian Air Force.

July 1927 : Directorate of Civil Government Air Operations (DCGAO) created to administer and control all Non-Military air operations carried out by government aircraft.

22 August 1927 : Fokker F.VIII "H-NADU" operated by KLM suffers an in-flight failure of the vertical tail control on a flight from Croydon to Amsterdam and crashes at Underriver, Kent killing one of the eleven people on board.

1927 : RCAF reorganised, Directorate of Civil Government Air Operations (DCGAO) created to:

1. Administer all non-military air operations carried out by government aircraft.
2. Control all non-military air operations carried out by government aircraft.
3. Administer units, detachments and formations of the RCAF placed under its control.
4. Control units, detachments and formations of the RCAF placed under its control.

The DCGAO organizational structure:

1. "nominally" a civil organization (means "other than civilians" actually ran the organization)
2. reports to the Deputy Minister of National Defence.
3. staffed primarily by RCAF personnel
4. reorganization produced considerable shuffling of offices and appointments

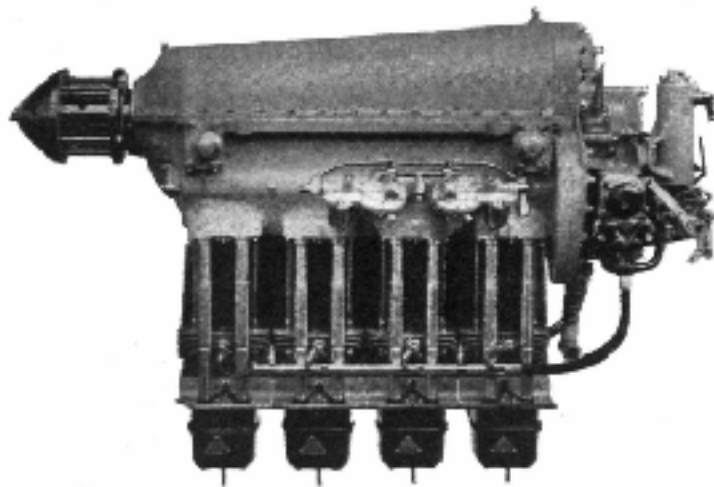
## Notes on "Civil Aviation"

5. effect on flying operations was more apparent than real.
6. RCAF made the military branch under the Minister of Defence
7. Civil Government Air operations fall under deputy Minister (this branch later absorbed into RCAF in 1936)

September 1927 : Canadian Department of National Defence policy *"The Department will issue to any duly incorporated club or association approved by the Minister of National Defence for this purpose, two light aeroplanes free of charge. The club or association will be required to make proper provision for the housing, maintenance and repair of the aeroplanes, to arrange for the use of a flying field (or a seaplane base) and the services of a qualified instructor to be approved by this Department to supervise the flying, and a licensed air engineer for the maintenance of the aircraft in an airworthy condition [...]"*

1927 - His Excellency the Right Honourable Freeman Viscount Willingdon, G.C.S.I. . G.C.M.G., G.C.I.E., G.B.E., Governor General and Commander in Chief of the Dominion of Canada.

# GIPSY AERO ENGINES



1927 : Frank Victor Burton joins the Edmonton and Northern Alberta Aero Club.

1. Obtains his pilot's license and
2. Obtains his air engineer's license.
3. one of the first holders of all air engineer license categories A, B, C, and D in Canada.

1939 : Frank Burton becomes chief engineer at No. 16 Elementary Flying Training School in Edmonton. (No. 16 Elementary Flying Training School - Edmonton later becomes No. 32 EFTS - Bowden)

1943 : Frank Burton becomes the manager No. 32 Elementary Flying Training School

## Notes on "Civil Aviation"

1955 -1957, retired, Frank Burton works for Bradley Air Service<sup>201</sup> <sup>202</sup>



31 December 1927 : 111 Air Engineers licensed in Canada - source pg 54 Aero Digest - Canadian Aviation Progress by James Montagnes March 1929 - ref <https://archive.org/stream/aerodigest1419unse#page/n461/mode/2up/search/Air+Engineers>

### CANADIAN AVIATION - 1928

1928 : AIR SERVICES IN CANADA : the Canadian Quarterly Review by Group Captain J. S. Cott, M.C., A.F.C., p.s.a., R.C.A.F.

THE air services of Canada, which form part of the Department of National Defences, consist of:

The Directorate of Civil Government Air Operations.

The Controller of Civil Aviation.

The Aeronautical Engineering Division.

The Royal Canadian Air Force.

The Directorate of Civil Government Air Operations

The Directorate of Civil Government Air Operations

administers and controls all air operations carried out by State aircraft other than operations of a military nature.

Under the Director are :—

Officer i/c Civil Air Operations.

Officer i/c Aircraft Equipment and Stores.

Officer i/c Administration, Organization, Personnel.

Services, with subordinate officers.

There are air stations at High River, Alta, Winnipeg,

Man., Ottawa, Ont., and Dartmouth, N.S., with a depot and

photographic section at Ottawa, and sub-stations or detachments

at various points in Saskatchewan and Manitoba.

There are also eight photographic departments for all the

<sup>201</sup> Edmonton Journal, 31 July 1972. City of Edmonton Archives.

<sup>202</sup> [https://www.edmonton.ca/city\\_government/documents/BurtonPkg.pdf](https://www.edmonton.ca/city_government/documents/BurtonPkg.pdf)

## Notes on "Civil Aviation"

Provinces except B.C. and P.E.I.

Controller of Civil Aviation

The Controller of Civil Aviation is responsible for the administration of the Air Regulations, and such other duties as the Honourable the Minister may direct. Under him are a Superintendent of Air Regulations and a Superintendent of Airways

Examination of Personnel and Inspection of Aircraft. —Air Regulations require that all pilots, air engineers, aircraft and air harbours in Canada shall be licensed by the Controller, of Civil Aviation, and, under instruction, by approved examiners from Air Force stations.

The following figures give the number of personnel and aircraft engaged in civil aviation during the last three years

Private pilots

Commercial pilots

Air engineers. .

Aircraft

1925

7

29

86

34

1926

8

38

83

44

192

65

102

62

Aeronautical Engineering Division ^

The Aeronautical Engineering Division is required to act in a consultant capacity respecting all technical and engineering matters pertaining to the Air Services and the carrying out of the duties prescribed by the Air Board Act and regulations thereunder. The division is in charge of the Chief Aeronautical Engineer and is divided into three main sections as under.

(i) Research. —The Research Section is mainly responsible for the preparation of specifications for new types of aircraft and aircraft accessories, the supervision of type trials for new types of aircraft and of the trials of aircraft which have been modified ; the reduction of these results to standard conditions for comparison purposes ; the issuance of modifications found desirable either for the purpose of airworthiness or to meet certain service conditions ; the design of special pieces of equipment, such as camera mounts, skis, etc., the collection and dissemination of technical information, including the issuance of information circulars.

(ii) Airworthiness.—Air Regulations, 1920, require that before an aircraft can be operated commercially in Canada or a private aircraft can be operated across the international boundary, the aircraft must be certified as airworthy. The Airworthiness Section is devoted entirely to checking the strength of commercial, private and Air Service aircraft.

(Hi) Inspection.—The inspection of aircraft during construction is carried out by the Aeronautical Inspection Department, by means of small detachments of officers and



## Notes on "Civil Aviation"

N.C.O.'s stationed permanently at the works of the various manufacturers. The administration of these detachments is carried out from headquarters, and all instructions are issued from headquarters. The work of the Inspection Section at headquarters consists in issuing instructions to inspectors, particularly instructions with regard to new processes and new materials; carrying on correspondence upon queries that arise in the course of inspection ; testing materials submitted by contractors to see that they meet the necessary specifications; correspondence through the Intelligence Officer with the Air Ministry upon the subject of new specifications and materials ; the study of new processes in manufacture ; the correspondence relating to the allocation of inspection duties, particularly the decision as to whether parts shall be inspected at source or on receipt.

The Royal Canadian Air Force

The Royal Canadian Air Force administers and controls all military air operations. The policy of the Royal Canadian Air Force is as follows :—

- (a) To develop and maintain air power in Canada.
- (b) To provide adequate training facilities for all Government air services.
- (c) To provide a nucleus Air Force round which service units can be formed in the event of war.
- (d) To build up a reserve of pilots and mechanics.

In order to provide effectively for the carrying out of these duties and to ensure that too great a variation in procedure does not exist between the R.C.A.F. and the R.A.F., the more established procedure of the R.A.F. in respect to administration, stores and equipment, is being adhered to as closely as conditions permit. The R.C.A.F. is, therefore, profiting by the experience of the older and larger service, the R.A.F., and in the case of emergency a closer understanding and co-operation will be existent between the two forces.

Organisation.—The R.C.A.F., as the strictly military branch of the air services, comes under the Chief of the General Staff. The R.C.A.F. headquarters at Ottawa consists of a director, an assistant director and six staff officers, the duties being divided under the heads of:— Organisation and staff ; Training ; Operations and intelligence ; Regulations, Personnel ; Equipment.

The principal station is at Camp Borden, Ontario, with another station at Vancouver and a communication flight

R.C.A.F. Station, Camp Borden

- No. 1 (ab-initio training) Squadron : 24 x Lynx powered Avro 504 (including 6 in reserve)
- No. 2 (advanced training) Squadron : 8 x D.H Moths or Couriers (including 2 in reserve)
- No. 3 (service) Squadron : 14 Siskin, Atlas, Fairchild (including 4 in reserve)

There are also a ground instructional school, workshops, and stores depot.

R.C.A.F. Station, Vancouver

- No. 4 (training) Squadron : 3 x Avro 504, 1 x Courier.
- No. 5 (service) Squadron : 2 x Fairey III-F .

R.C.A.F. Communication Flight, Ottawa

Communication flight at Ottawa : 1 x Avro, 1 x Vedette, 1 x Corsair.

## Notes on "Civil Aviation"

R.C.A.F. Liaison Office, London, England.—The R.C.A.F. Liaison Office is in charge of an officer, permanent R.C.A.F., with an under-staff of civil employees, and is maintained as part of the office of the High Commissioner for Canada, but is housed in the Air Ministry, London, England.

The duties which devolve on this officer and his staff consist of the collection and transmission of intelligence of all kinds between the R.A.F. and the R.C.A.F. By reason of his location, the Liaison officer has ample opportunity to permit his keeping in touch with the latest developments in aviation in Great Britain and Europe for communication in Canada.

Selection of Personnel.—The nature of the equipment used in the R.C.A.F. requires a high standard of technical knowledge on the part of all ranks in the service.

It is the policy of the R.C.A.F. to secure officers and airmen from the following sources :

Officers.—From gentlemen cadets who have graduated from the Royal Military College and from students of recognised universities who have attained their degree in applied science of engineering.

Airmen:- From the ranks of the skilled artisans of industry and from the graduates of certain technical schools where they receive special training.

Training.—To fit the personnel of the R.C.A.F. to carry out their varied duties efficiently, almost endless training is necessary. The greater part of this training is carried out at Camp Borden, though personnel are also trained at Vancouver, at commercial plants, at universities, and in the Royal Air Force. An outline of some of the training is as follows :

(i) Ab initio Flying Training :—Ab initio flying training is given to provisional pilot officers and N.C.O.'s selected for training as pilots. In accordance with the stated policy for the selection of officers for the R.C.A.F., to obtain young men having a sound education, with special qualifications on the technical side, arrangements have been made with recognised universities to obtain a number of students of applied science and engineering faculties and train them at Camp Borden during the summer vacation. A number of gentlemen cadets from the Royal Military College are accepted each year in the same way. During training they are granted the temporary rank of provisional pilot officers.

The course of training consists of three terms, each of three to three and a-half months' duration (approximately May 15 to September 1) in three consecutive years.

On completion of the Provisional Pilot Officers' Course, successful candidates are eligible for :—

(a) Appointment as pilot officers in the Permanent R.C.A.F.

(b) Appointment as pilot officers in the Non-Permanent R.C.A.F.

(c) Transfer to the Reserve of Officers.

(d) Employment in the flying capacity in civil aviation

This scheme of training has been in force since 1923 and while the numbers selected each year have been limited, gratifying results have been obtained.

The training of N.C.O. pilots was authorised in November, 1926. During the winter 1926-1927 four N.C.O.'s qualified for their wings. At present there are six N.C.O.'s undergoing ab initio training and should qualify for wings in the near future.

(ii) Advanced Flying Training : —When a pupil qualifies for pilot's wings he is far from being a fully trained pilot; it is proposed, therefore, during the present year to give 10 to 15 officers advanced training at Camp Borden. This course will include flying on the latest training and service types and advanced instruction on service subjects, such as

## Notes on "Civil Aviation"

Army Co-operation, Armament, Air Pilotage, etc. The majority of these officers will be P.P.O.'s who qualified for wings during the summer of 1927.

(iii) Service Flying Training : —Up-to-date service aircraft will be available this year for the first time in R.C.A.F.

history. It is proposed to organise a Service Squadron at Camp Borden consisting of one Flight of fighting aircraft, one Flight of Army co-operation aircraft, and one Flight of photographic aircraft. Training will commence as soon as possible, and will continue until the personnel of the squadron have attained a high degree of efficiency in their respective work. The methods of training adopted in the R.A.F. will be followed as closely as possible.

(iv) Refresher Flying Training : —Refresher training is carried out periodically at Camp Borden for the personnel of the R.C.A.F. and the Directorate of Civil Government Air Operations, to improve the standard and to permit personnel employed on other duties to become familiar with the latest developments and methods in the varied lines and subjects required of Air Force personnel.

In addition to service personnel, a large number of commercial pilots have been given refresher courses at Camp Borden during the last four years.

(v) Unit Winter Training: —During the winter when ab initio flying training and operational flying is not being carried out, officers and airmen, not attending courses, are given instruction at their units, on service subjects. These courses are arranged to interfere as little as possible with routine duties.

(vi) Technical Training for Boys :—With the expansion of the Air Services there arose an important factor in respect to the supply of young and semi-trained airmen. Technical schools throughout Canada have been asked to train boys in aeronautical subjects with a view to enlistment in the R.C.A.F. when of age. This training is being carried out along the following lines :

The technical school course for boys is usually of three years' duration, the first year being the same for all courses. In the second year, boys who have completed their second year at technical school, and are considered suitable for the particular trade specified in the quota, are enlisted in the non-permanent R.C.A.F. They are enlisted as " Boys " if between the ages of 16½ and 18 years, or as " Aircraftmen, 2nd class " if between the ages of 18 and 24 years, and are attached to an R.C.A.F. unit for instruction during the summer vacation. Having successfully completed their technical school training they are enlisted in the permanent R.C.A.F. after having passed the necessary trade tests. The first course, consisting of 19 boys, started on July 1, 1927. and 16 boys successfully passed the first period of training. In order to foster and further the co-operation of technical schools, a bond of \$100 is to be given to schools from which airmen have qualified and been enlisted in the permanent R.C.A.F.

(vii) Civilian Flying Training : —On the recommendation of the Controller of Civil Aviation, a limited number of pilots from commercial companies, the Ontario Government Air Service, and Flying Clubs, are given refresher training and training for flying instructors.

(viii) Special Courses : —Numerous courses have been arranged for by the R.C.A.F. for the different branches of the Air Service in 1928. These include :—  
For the Civil Government Air Operations Branch :—

## Notes on "Civil Aviation"

Specialist training on enlistment (7 months) Storekeeping (1 month), Training Pool (1 year), Seaplane training (2 months), Advanced training in Navigation, Cloud Flying and Photography (5 months), Airmen Pilots ab initio (6 months), Advanced training for ab initio pilots (1 year) (Reserve).

For the Controller of Civil Aviation Branch :—

Commercial Pilots (1 month), Flying Instructor's Course ^ or Commercial Pilots (1 month), Flying Club Instructors (1 month).

For the R.C.A.F. :—

Service Training Squadron (1 year). Specialist Training on enlistment (7 months), Army Co-operation (1 month), Storekeeping (1 month), Training Pool (1 year), P.P.O. training (3 months), Boys' technical training (2 months), Staff College Preparatory, Kingston (3 months), Artillery co-operation (Army) (15 days), Auxiliary (Borden) (1 month), Auxiliary (local) (14 days), Miscellaneous (Wood Technical, parachutes, etc.) (as long as necessary).

These courses provide for the training of 268 officers, commercial pilots and flying club instructors, and 264 N.C.Ob., airmen and boys.

Selected officers of the K.C.A.I., also attend courses in England as under :—

Imperial Defence College (1 year), R.A.I". Staff College (1 year), Royal Naval Staff College (1 year), Army Co-operation (3 months), Armament (6 months), Flying Instructors (3 months), Air Pilotage (3 months), Aeronautical Engineering (10 months), Storekeeping (1 year), Wireless (7 months).

Exchange of Officers. —An exchange of officers with the Royal Air Force for a period of two years is being carried out under the following categories :—

1 seaplane pilot.

1 stores officer.

1 Engineer officer on aircraft inspection work.

These officers of the R.C.A.F. are employed as regular officers of the R.A.F. and at the conclusion of their period of attachment return to Canada with a knowledge which can be embodied in the R.C.A.F. procedure, and will doubtless prove of extreme value. At the same time the R.A.F.

officers return to England with first-hand information of Canadian conditions and the spirit of co-operation within the Empire is further developed.

AIR SERVICES.

The Royal Canadian Air Force

Director (Acting), Wing-Commander L. S. Breadner,  
D.S.O., p.s.a.

R.C.A.F. Training Stations

Camp Borden, Ont. Officer Commanding, Wing-Com-  
mander G. M. Croil, A.F.C., p.s.a.

Vancouver, B.C. Officer Commanding, Flying Officer  
A. H. Hull.

R.C.A.F. Communication Flight, Ottawa. Ofhcer-in-  
Charge, Flight-Lieut. H. W. Hewson.

Civil Government Air Operations

Director, Wing-Commander J. L. Gordon, D.F.C., A.D.C.,  
p.s.a.

Stations

Winnipeg Air Station, Man. Officer Commanding, Fliglit-  
Lieut. L. F. Stevenson.

## Notes on "Civil Aviation"

High River Air Station. Alta, Officer Commanding,  
Flight-Lieut. G. V. Walsh, M.B.E.  
Ottawa Air Station, Ont. Officer Commanding, Flight-  
Lieut. R. S. Grandy.  
Dartmouth Air Station, N.S. Officer Commanding,  
No. 1 Depot, Ottawa, Ont. Officer Commanding, Squadron  
Leader D. C. M. Hume.  
Photographic Section, Ottawa, Ont. Officer Commanding,  
Flight-Lieut. E. R. Owen.  
Hudson Straits Expedition. Officer-in-Charge, Squadron  
Leader T. A. Lawrence.  
Aeronautical Engineering  
Chief Aeronautical Engineer, Wing-Commander E. W.  
Stedman, O.B.E.  
Civil Aviation  
Controller of Civil Aviation, J. A. Wilson, Esq.  
Superintendent, Air Regulations, Squadron Leader A. T.  
Cowley\*.  
Superintendent, Airways, Squadron Leader J. H. Tudhope.

The famous Armstrong Siddeley Jaguar engine in its standard and supercharged form, and the Genet 80/88 h.p. light aircraft engine, are also being used extensively, as is the Armstrong Whitworth "Atlas" type of general-purpose aircraft. The Armstrong-Siddeley "Lynx" engine is, as previously recorded, employed extensively in aircraft such as the Avro Lynx, the Vickers "Vedette" and the Vickers Varuna," while up till now the "Genet" engine has done most of its work in the "Genet-Moths" of the Royal Canadian Air Force the Royal Canadian Air Force have standardised the Siskin all-steel single-seater aircraft for the fighter units and Armstrong Siddeley radial air-cooled engines are now in extensive use across Canada. To give the utmost, quickest and best possible service, ARMSTRONG SIDDELEY MOTORS, Limited, the allied company of Sir W. G. Armstrong Whitworth Aircraft, Limited UK, have, in conjunction with the Ottawa Car Company, established a service station at Ottawa, where the engines in use in Canada may, when necessary, be sent for complete overhaul by highly-skilled Armstrong Siddeley engineers. The Ottawa Car Manufacturing Co., also has an arrangement with the Consolidated Aircraft Co., of Buffalo, N.Y., for the assembly of their machines in Canada. The Wright Aeronautical Corporation of Patterson, N.J., have formed a branch company in Montreal for the assembly and service of Weight engines

the de Havilland Aircraft of Canada, with headquarters at 1001, Federal Buildings, 85, Richmond Street West, Toronto, was established in February of this year and put under the very able management of Mr. R. A. Loader, who was a familiar and popular figure at Stag Lane until his appointment to the new post in Canada. the Canadian market would not be large enough to support a mass-production factory such as that which has grown up at Stag Lane. The policy was therefore adopted of manufacturing the components in England and shipping them to Canada for erection there, at the new workshops at Mount Dennis. where workshops were constructed to deal with erection repairs and overhauls and incorporating a service station carrying a large stock of all spares. already some 100 "Moths" are in operation in Canada. In addition to the de Havilland "Moths" owned by clubs and private individuals, the Canadian Government has 50 of these machines. The Ontario Provincial Government has 10 of these machines, and the "Moth" is also used by the Laurentide Air Service, Montreal ; by Western

## Notes on "Civil Aviation"

Canadian Airways, Winnipeg; by Dominion Airways, Vancouver ; by the Canadian Ministry of Marine, and by some business houses with sufficient initiative to realise the great advantages of air transport. Sir Charles Wakefield presented two " Moths " to Canada : a landplane to the Toronto Flying Club and a seaplane to Major-General J. H. MacBrien for his personal use on behalf of aviation in Canada. General MacBrien has for some time been president of the Aviation League of Canada, and was until recently Chief of the Canadian General Staff. Another distinguished owner of a " Moth " is Mr. J. A. Wilson, Director of Civil Aviation in Canada, an *indefatigable worker in the cause of aviation*, regularly uses his " Moth " for every duty connected with his office . The D.H.61, specially built for colonial conditions, is finding increasing favour in Canada. Fitted either with the geared or ungeared Bristol " Jupiter " engine, this machine, which carries eight passengers, cruises at about 110 m.p.h. One of these machines, with interchangeable land and float undercarriages, has recently been supplied to the Ontario Provincial Air Service, Canadian Vickers, whose machine is a seaplane, and the London Air Transport Company of Ontario, who own a landplane variant.

ambitious light 'plane attempt upon the Atlantic from Newfoundland to Ireland in a Gipsy-Moth. Lieut.-Com. H. C. MacDonald, D.S.C., is the pilot. His Gipsy-Moth was shipped to St. John's, Newfoundland, from Liverpool on September 18. Should conditions at the time be against the venture he might then possibly and wisely turn his intentions to a flying tour of America or Canada.

The distance from St. John's, Newfoundland, to Clifden, Ireland, is 1,890 miles.

The Gipsy-Moth will be standard in all respects except for the modifications for the greater fuel capacity. The front cockpit will be fitted with the extra tank and the total amount of fuel carried will be about 100 gallons, which will allow for a flight of 3,500 miles at an average cruising speed of 100 m.p.h., that is, a duration of 35 hours. For the purpose of making a very limited comparison it might be recalled that Capt. H. Broad remained in the air for 24 hours on the Gipsy-Moth in his recent duration flight and had sufficient fuel for another 4 hours, but of course he was throttled back to the minimum cruising speed. He took off for that flight easily with a load of 80 gallons of fuel.

Commander MacDonald, D.S.C., is on the Emergency List of the Royal Navy,.

REPORT OF THE DEPARTMENT OF NATIONAL DEFENCE, CANADA (Militia and Air Services) FOR THE FISCAL YEAR ENDING MARCH 31, 1927 - REPORT OF THE CHIEF OF STAFF : the several branches and directorates of the General Staff appended hereto have been subdivided as follows:— (a) Militia Service

- (1) Military Operations and Intelligence
- (2) Military Training and Staff Duties
- (3) Artillery
- (4) Signals
- (5) Small Arms School
- (6) Physical Training and Cadet Services

## Notes on "Civil Aviation"

(7) Historical Section.

(b) Royal Canadian Air Force

(1) Military Operations and Intelligence

### Operations

Canadian defence problems and military policy have received the close attention of this directorate throughout the year.

Matters emanating from the League of Nations and forwarded to this department have received attention.

The question of Disarmament has been thoroughly studied.

Defence questions to be considered at the Imperial Conference were referred to this directorate for consideration and reports. Military Intelligence

The Military Intelligence Service at National Defence Headquarters and in the Military Districts has now reached a very fair degree of efficiency. The process of collection, collation and distribution of military intelligence has gone on in the normal way, and the Intelligence Service would function smoothly with the rest of the staffs in case of emergency.

The Assistant Director of Military Intelligence continues as Chairman of the Editorial and Managing Committee of the Canadian Defence Quarterly, a duty which requires a great deal of time and concentrated attention. The directorate, as a whole, has given wholehearted assistance towards its publication.

The Assistant Director of Military Intelligence also continues to carry out the duties previously performed by the Staff Officer to the Inspector General. NATIONAL DEFENCE (MILITIA AND AIR SERVICES)

Close liaison has been maintained with other departments of the Federal Government and other organizations that are of particular interest to this directorate. The officers of this directorate have given many lectures to the Non-

Permanent Militia, at the Royal Military College and to other organizations

which are interested in military or Empire problems. Staff

There have been no changes in the personnel of this directorate during the fiscal year. All ranks have worked loyally and the efficiency has increased. With the exception of two females in the General Staff and Departmental Library and one in the Intelligence Service ^ all the personnel of this directorate are male. About half the personnel of the directorate are military and the other half civil servants and most of the civil servants are ex-service men.

(b) The Royal Canadian Air Force

The direction and control of aeronautics in Canada, both civil and military, come under the jurisdiction of the Department of National Defence. The powers and duties involved are exercised, under the direction of the Minister, by the Chief of Staff, through the Director of the Royal Canadian Air Force.

The Royal Canadian Air Force has the following composition: —

(a) The Active Air Force.

(5) The Reserve Air Force.

(a) The Active Air Force. '

The establishment of the Permanent Active Air Force of Canada consists of 95 officers and 375 airmen permanently embodied for continuous service, and available for general service, including training and operations for civil government departments. The strength of the Royal Canadian Air Force was up to full establishment on March 31, 1927.

The Non-Permanent Active Air Force is comprised of such units or detachments and other formations as are from time to time named by the Governor in Council. At present there are authorized 67 officers and 130 airmen.

(b) The Reserve Air Force.

The constitution and regulations for the Reserve Air Force are now in course of preparation. The Reserve Air Force will consist of qualified officers and airmen who will be liable to be called out for such training as, may be prescribed.

The period of service in time of peace for the Royal Canadian Air Force is as under: —

(a) For the Active Air Force — Three years.

(6) For the Reserve Air Force — Such a period as may be prescribed by the Governor in Council.

No Non-Permanent Active Air Force units have as yet been formed, due to financial limitations.

King's Regulations and Orders for the Royal Canadian Air Force, 1924, as approved by His Excellency the Governor in Council, on January 15, 1924, with such amendments as have been since that time approved, are in operation for the

#### 40 NATIONAL DEFENCE (MILITIA AND AIR SERVICES)

direction of the Royal Canadian Air Force, and other subsidiary regulations (with exception of dress) as approved and put into operation on April 1, 1924, are, with minor amendments, still in effect. Dress Regulations were entirely redrafted and approved in 1925, and issued in 1926.

A report, covering Civil Aviation and Operations of the Royal Canadian Air Force for civil government departments during the year 1926 is being published (copies of this report may be obtained upon application to the Secretary, Department of National Defence, Ottawa). In this report (Civil Aviation, 1926) full details as to civil aviation in the country are dealt with, including operations of commercial aviation firms and the activities of the R.C.A.F., undertaken in conjunction with other departments of the Government for the better protection of forests from fire, aerial surveying, exploratory work; transportation in remote parts of the country; fishery protection, customs patrols, etc. These phases of the work will, therefore, not be dealt with in this report, which is confined entirely to Air Force duties.

R.C.A.F. Organization.



## Notes on "Civil Aviation"

The R.C.A.F. is divided into three sections, as follows: —  
Director, R.C.A.F.

(1) Assistant Director, Air Staff and Personnel.

(2) Assistant Director, Supply and Research.

(3) The Secretary.

(1) The Branch of the Assistant Director, Air Staff and Personnel, is divided into five sections, —

(a) Personnel,

(b) Training,

(c) Civil Operations,

(d) Intelligence Duties,

(e) Administration,  
each under its own, Staff Officer.

(a) The Staff Officer, Personnel, deals with appointments promotions, transfers, courts of inquiry, pay, and other similar matters.

(b) The Staff Officer, Training, is responsible for the training of the R.C.A.F., including Provisional Pilot Officers' Training; combined operations with the Military and Naval Forces ; courses of instruction, and all other matters connected with Air Force training and operations.

(c) The Staff Officer, Civil Operations, deals entirely with the operations undertaken, in conjunction with civil branches of the Government service, and includes such work as forestry and fisheries ^ patrols; aerial survey; photography; transportation; preventive patrols, etc.

(d) The Staff Officer, Intelligence, is responsible for the collection, recording, and dissemination of all Air Force Intelligence. He works in collaboration with the Military and Naval Intelligence Staffs and is, at all times, in the closest touch with their work, so that the other Services may be fully informed on Air Force Intelligence matters, and that duplication, of effort in the collection of defence information may be avoided.

(e) The Staff Officer, Administration, is responsible for the revision and promulgation of all Air Force Regulations.

(2) The Branch of the Assistant Director of Supply and Research is divided into two sections: —

(a) Technical and Research.

(6) Equipment and Supply.

### NATIONAL DEFENCE (MILITIA AND AIR SERVICES) 41

(a) The Technical and Research section deals with technical development of aeronautics; the design and construction of aircraft, engines, and accessories;

## Notes on "Civil Aviation"

air maintenance; questions of airworthiness of service aircraft, and any other aeronautical engineering questions arising.

(6) The Equipment and Supply Branch deals with all matters pertaining to the supply of equipment; storekeeping duties; storage depots; the disposal of surplus equipment; and other duties of a like nature. It is responsible for all indents made on the Contracts Branch; for the purchase of supplies, so that adequate stocks of all classes of material may be maintained at all times for the proper execution of the various duties of the Air Force.

(3) The Secretary's Branch is responsible for the control of Civil Aviation, including the licensing of Pilots and Air Engineers; the registration, inspection for airworthiness, and marking of Commercial aircraft, inspection and licensing of Air Harbours, and the control of Commercial aviation operations generally. This branch is also responsible for the preparation of the Air Force estimates and a report on the work of the Air Force, and control of civil staff and other civilian duties. The control of Civil Aviation is carried out by the Controller of Civil Aviation, an officer of the Permanent Air Force, appointed to this Branch for these duties.

### R.C.A.F. Units

No. 1 Squadron (Operations), Vancouver, B.C. — Established in the summer of 1920 at Jericho Beach, on English Bay, just outside the city of Vancouver, this unit has been in continuous operation. Operations were carried out at this unit under the Air Board and Canadian Air Force up to April 1, 1924, when the unit came under its present designation in the R.C.A.F., and since that time has been functioning as an Air Force unit.

The unit is well equipped in regard to hangars, shops and slipways. Barrack accommodation and housing of the personnel are required. The provision of more modern aircraft, giving greater efficiency in both service and civil operations, is an urgent necessity.

The duties allotted to No. 1 Squadron are as follows: —

(a) R.C.A.F. duties:—

- (1) Seaplane training for officers (ab initio).
  - (2) Winter training — Officers and airmen.
  - (3) Combined operations and training with Naval and Military Forces.
  - (6) Forest fire protection work for the Federal and Provincial Governments.
- (c) Aerial photography.
- (d) Fishery protection.
- (e) Customs preventive patrols.
- (/) Blister Rust control and Spruce Bud- Worm investigation.

During 1926, ab initio seaplane training was carried out, at which nine officers attended, all of whom qualified as seaplane pilots.

One Commercial Pilot received a Refresher Training Course at this Station

during the year under review.

Winter training for all officers and airmen was carried out during the winter of 1926, training which was instituted with the object of a thorough grounding for officers and airmen in subjects pertaining to Air Force Law and Discipline; Air Pilotage; Airmanship; Aeronautical Engineering; Interior Economy; Physical Training, and Drill, etc. This training had most satisfactory results.

No. 2 Squadron (Operations), High River, Alta. — The High River unit, which has been situated at High River since the spring of 1921, has, since

#### 42 NATIONAL DEFENCE (MILITIA AND AIR SERVICES)

April 1, 1924, been operating under the Royal Canadian Air Force. Prior to April 1, 1924, the unit was operated by the Air Board and the Canadian Air Force, and, since its establishment in the fall of 1920, has been located at Morley and High River. During the years it has been in operation, hangars, shops, wireless stations and storehouses have been provided and in these respects the station is well equipped. Barrack accommodation for the housing of officers and men is still required. Modern aircraft specially designed are being built to meet the dangerous conditions existent in the foothill region. During 1926, detached photographic operations were carried out from different bases in Alberta and Saskatchewan under the supervision of the Officer Commanding the High River Unit. Winter flying tests to determine the effect of extreme low temperature on the operation of two Siddeley Siskin aircraft were carried out at Edmonton, Alta., by personnel of this unit.

The operations carried out at the High River unit during 1926 were as follows: —

(a) R.C.A.F. duties—

- (1) Winter training for officers and airmen.
- (2) Parachute riggers' training.
- (3) Combined operations and training with Military Forces.
- (4) Winter flying tests.

(b) Forest fire protection.

(c) Aerial surveys.

(d) Aerial photography.

During the fiscal year 1926-27, a very comprehensive scheme of winter training, for officers and airmen, was carried out at the High River unit. The syllabus of this course covered training on subjects such as Air Force Law and Discipline; Air Pilotage; Airmanship, Aeronautical engineering; Interior Economy; Physical Training; Drill, etc.

Two Parachute Riggers' Courses were given during this period, at which three officers and four other ranks attended for instruction.

## Notes on "Civil Aviation"

No. 1 Wing, Winnipeg, Man. — Headquarters for No. 1 Wing, Winnipeg, is now located at 797 Notre Dame street, having moved from Fort Osborne Barracks, where they have been located since 1922. Previous to that the Headquarters was situated at Victoria Beach, on Lake Winnipeg, during the summer season, and in rented premises in Winnipeg during the winter, where the overhaul of aircraft and equipment, used in forestry patrol and aerial survey work, was carried out. On the reorganization of the Unit on an Air Force basis, it was deemed essential to provide a better base for its headquarters. Fortunately, accommodation for the personnel was available at Fort Osborne Barracks, and, in 1922, the adjacent tract of land, suitable for aerodrome purposes, was purchased. In 1925 a further parcel of land was added to the purchase of 1922.

Up to the present, funds have not permitted, however, of the erection of hangars and workshops on the aerodrome site.

During 1926 sub-bases at Lac du Bonnet, Norway House, and Cormorant Lake were operated. The sub-bases were closed in the fall of 1926, and the personnel and equipment withdrawn to Winnipeg where they are employed on the overhaul of aircraft, engines, and other equipment. Air Force training, and courses of instruction.

The operations carried out at No. 1 Wing are as follows: —

(a) R.C.A.F. duties—

(1) Winter training — ^ Officers and airmen.

(2) Combined operations and training with the Military Forces.

### NATIONAL DEFENCE (MILITIA AND AIR SERVICES) 43

(6) Forest fire protection.

(c) Aerial surveys.

(d) Aerial Photography.

(e) Transportation for the Department of Indian Affairs, Mines, Mounted Police, and other services.

The present Avro Viper fire detection, patrol aircraft should be replaced by more efficient types and a larger weight carrying flying boat should be provided for fire suppression duties. The substations at Lac du Bonnet and Cormorant Lake still require more ground equipment and ground facilities for the housing of the personnel and the carrying on of the summer operations.

Winter training courses for officers and airmen covered such subjects as already outlined in the Vancouver and High River training of a similar nature.

A Refresher Course in Seaplane Flying was given to one Commercial Pilot during the year.

No. 1 Flying Training Station, Camp Borden, Ont,

The Air Station at Camp Borden, at present in, use, is that which was built

during the war by the Imperial Munitions Board as a Training Station for the R.A.F. Units recruited in Canada. The Station, though admirably suitable for flying operations on a large scale, is too large for the present establishment of the R.C.A.F. Maintenance charges in general are altogether disproportionate to the present strength of the R.C.A.F. The Camp is, as well, isolated and difficult of access. For these reasons it is hoped that accommodation, on a more suitable scale, involving smaller maintenance charges, may be made available at an early date for the training of the R.C.A.F.

(a) Refresher Flying Courses were given to seven Permanent and three

Non-Permanent officers of the R.C.A.F.

(h) Training for Provisional Pilot Officers. Eleven Provisional Pilot Officers underwent their first term of ab initio flying training, nine of whom successfully passed their examinations at the completion of the term. Sixteen Provisional Pilot Officers attended for the second term of ab initio flying training, fifteen of them successfully completing their second term.

Nine third term Provisional Pilot Officers attended, seven of whom successfully passed their examinations upon the completion of the course, and qualified as pilots. Three of the successful candidates were given further flying instruction, and granted commissions in the Non-Permanent R.C.A.F.

(c) Nine Commercial Pilots received flying training at Camp Borden.

(d) An N.C.O. Pilots' Course was given, six airmen attending. This course was not completed at the end of the 1926-27 fiscal year.

(e) A Radio Training and W. T. Course, extending over a period of two weeks, was given, and was attended by nine officers and one N.C.O.

(f) An Artillery Co-operation course, extending over a period of three weeks, and attended by one Naval, seven Army, and four Air Force officers, was given.

(g) A Parachute Course, extending over a period of four weeks, and attended by two officers and five airmen, all of whom successfully passed their examination at the completion of the course, was given.

(h) A Flying Instructors' Course, covering a period of three weeks, was attended by seven officers of the Permanent Active Air Force. The officers were classified, or, in the case of former instructors, reclassified, at the completion of the course.

#### 44 NATIONAL DEFENCE (MILITIA AND AIR SERVICES)

(i) An N.C.O.'s Drill Course, extending over a period of one month and attended by N.C.O.'s from different R.C.A.F. Units was completed.

(j) Two Storekeeping Courses for Airmen were given, each course extending over a period of one month. The first course was attended by twelve N.C.O.'s, and the second by nineteen airmen.

A refresher flying course for Non-Permanent R.C.A.F. officers, and

## Notes on "Civil Aviation"

Refresher Flying and Ground Instruction for Officers and Airmen of the Hudson Straits Expedition was started, but was not completed during this period.

No. 3 Squadron (Operations), Shirley's Bay, Ottawa. — This unit is situated on Shirley's bay, on lake Deschenes, some nine miles west of Ottawa. At the close of the operating season, aircraft and engines, and other equipment, are withdrawn to No. 1 Depot, Ottawa, for overhaul, part of the personnel being posted to the Depot to assist in this work, the remainder carrying on with routine Stores work in a temporary squadron office and stores in the Labelle building, Ottawa. Here also, barrack buildings for the housing of the personnel employed are urgently required.

The duties carried out at this unit are as follows: —

(a) R.C.A.F. duties.-

(6) Combined training and operations with military units.

(c) Experimental flights for development purposes.

(d) Aerial surveys.

(e) Aerial photography.

(/) Transportation.

No. 4 Squadron (Operations) Dartmouth, N.S. — Funds were not available for the operation of this Unit during the fiscal year 1926-27.

No. 1 Depot, Ottawa. — No. 1 Depot, inaugurated as the Central Repair Depot of the R.C.A.F., is situated on Victoria island, Ottawa. The Depot is composed of two very important units, the Main Workshops and the Central Stores Depot of the R.C.A.F.

The duties carried out at this unit are: —

(a) R.C.A.F. duties.

(6) Repair of all aeronautical equipment which cannot be undertaken at

other Air Force units,

(c) A.I.D. inspection duties.

(d) Issue of stores and Equipment to all other Air Force units.

### R.C.A.F. Training

R.C.A.F. Training may be divided into two categories: training for officers and for airmen.

The training for officers and airmen at R.C.A.F. units during the year has been dealt with under the respective units.

Arrangements have been made with the authorities of other services for the attachment for duty of R.C.A.F. officers to courses of instruction at the Royal Military College, and elsewhere throughout the country. Special courses of instruction in various subjects were carried out at other various units.

Officers of the Royal Canadian Air Force attended the following courses with the Royal Air Force in England: —

## Notes on "Civil Aviation"

- (a) R.A.F. Staff College, Andover— Attended by two R.C.A.F. Officers.
- (t>) Flying Instructors' Course, Central Flying School, Upavon — Attended by one R.C.A.F. Officer.

### NATIONAL DEFENCE (MILITIA AND AIR SERVICES) 45

- (c) Navigation Course at the R.A.F. School of Air Pilotage, Calshot — ■  
Attended by one officer of the R.C.A.F.

- (d) Army Co-operation at the R.A.F. Army Co-operation School, Old Sarum — Attended by one R.C.A.F. Officer.

- (e) Armament Course, Eastchurch ^ — Attended by one R.C.A.F. Officer.
- (/) War Staff Course at the Royal Naval Staff College, Greenwich —

Attended by one R.C.A.F. Officer.

- (g) Aeronautical Engineering Course at the Imperial College of Science,

London — Attended by one officer of the R.C.A.F.

None of the above Courses had been completed at the end of the fiscal year 1926-27.

### Provisional Pilot Officers' Training

The idea underlying the present scheme of the R.C.A.F. Provisional Pilot Officers' training is to obtain, with the minimum expense, a class of young officer having, in addition to his knowledge of flying, a thorough all-round education with special qualifications on the technical side. With this in view, arrangements have been made with the Canadian Universities to accept for Air Force training, a number of students in their first year from the Applied Science and Engineering faculties, and train them at Camp Borden during the summer vacations each year of their university course. A gratifying response is being received and sufficient numbers of volunteers are forthcoming already to ensure the success of the scheme. A number of Gentlemen Cadets from the Royal Military College are accepted each year in the same way. The scheme of training is as follows: —

The course of training consists of three terms, each of two and a half to three and a half months' duration (approximately May 15 to September 1) in three consecutive years. To be eligible for selection, a candidate must be attending a Canadian University or the Royal Military College of Canada. If the former, it is required that the candidate: —

- (a) Be a member of the Canadian Officers' Training Corps, and have performed the requisite qualifying service, and passed the practical examination for certificate " A " C.O.T.C.

- (6) Be following a course of study as an undergraduate, leading to a degree in applied science.

- (c) Be physically fit for Air Force service as a Pilot.

- (d) Be unmarried.

- (e) Be under 21 years of age upon the coimmencement of the course.

(/) Be recommended by the Military Committee of the University as

likely to become an efficient Air Force officer.

(g) Give an understanding to complete the whole course.

Before attending the Second Term, the candidate is required to be in possession of a certificate "A" C.O.T.C. Candidates who are Gentlemen Cadets attending the Royal Military College are required to: —

(a) Be first year students who are recommended by the Commandant as likely to become efficient Air Force officers, or, if second year students of the R.M.C. undertake to continue Air Force training after graduating from the Royal Military College, and who are recommended by the Commandant as likely to become efficient Air Force officers.

(6) Be physically fit for Air Force service as a Pilot.

(c) Be over 17 years of age on January 1 of the year of the commencement of the course.

(d) Give an understanding to complete the whole course.

#### 46 NATIONAL DEFENCE (MILITIA AND AIR SERVICES)

District Officers Commanding the several Military Districts throughout Canada are responsible for the distribution of information covering Provisional Air Force commissions to Universities within their respective districts, and the forwarding of applications to the Department of National Defence.

Status. — ^ While in attendance at the Royal Canadian Air Force Training Station, candidates are granted temporary commissions as Provisional Pilot Officers, and receive Pay and Allowances in accordance with Pay and Allowance Regulations for the Royal Canadian Air Force. The rates are as follows: —

Pay. — During the first term, \$3 per day; during the second term, \$3.50 per day; during the third term, \$4 per day.

Allowances. — While travelling to and from the Royal Canadian Air Force Training Station, candidates receive free transportation and a travelling allowance of \$5 per day.

Messing. — Candidates are required to live in the officers' mess, while at the Royal Canadian Air Force Training Station. The mess draws a free ration on behalf of each candidate, but, in addition, the candidate is required to pay a mess bill of approximately 75 cents per diem, to cover the additional cost of messing.

Quarters, Uniform, and Medical Attendance. — ^ While under training, candidates are provided with uniform, camp equipment and quarters, medical and hospital services being provided as necessary without charge.

Qualifications. — On completion of the course, candidates will be eligible for: —



## Notes on "Civil Aviation"

(a) Appointment as Pilot Officer in the Royal Canadian Air Force for permanent duty (the number of vacancies for such appointments will, in all probability, be very limited).

(b) Appointment as Pilot Officer in the Royal Canadian Air Force for active duty twenty-eight days in every two years, and in emergency.

(c) Transfer to the reserve of officers, in which case they will not be liable for further service, except in time of emergency.

### Training for Airmen

Funds have not been available for the establishment of any regular training for boys up to the present. Airmen have, therefore, been entered direct from, civil life and their training has proceeded at the unit to which they are attached for duty. Special courses for recruits have been held at Camp Borden and elsewhere, so as to give as thorough a preliminary training as the circumstances permit. As far as possible, trained mechanics are enlisted to fill the technical ranks. Training for airmen, however, cannot be considered complete until some suitable establishment can be provided whereby young mechanics may be thoroughly trained in Air Force duties, preparatory to joining a unit for actual service.

### Military COURSES IN CANADA : Staff College Preparatory Course src ref : 1928 Annual Dept reports - NATIONAL DEFENCE (MILITIA AND AIR SERVICES) pg 17

A course for officers preparing for the examination for admission to the Staff Colleges at Camberley and Quetta was held at the Royal Military College, Kingston, from October 1, 1928, to February 28, 1929.

This course was attended by five officers, all of whom competed at the examination for the three vacancies allotted to Canada. In addition one officer of the Royal Canadian Air Force attended for instruction until the end of September, 1928.

### Long Course

This course is held at the Royal Military College, Kingston, and is designed to qualify officers of the Non-Permanent Active Militia for commissions in the permanent Force. One candidate qualified at the course which commenced in February, 1928, and concluded in June, 1928. Two candidates attended the course which commenced in February, 1929.

### Hudson Straits Expedition.

A detachment, consisting of one officer and three non-commissioned officers accompanied the Hudson Straits Expedition, which went north in July, 1927, the purpose of supervising the installation and maintenance of air craft radio sets and the operation of the ground reception sets. Three stations were established by the expedition, one at Cape Burwell, one at Wakeham Bay and

3 at Nottingham Island. The headquarters of the expedition at Wakeham Bay - \*Range of Aircraft sets 1928 : : Telephony, 100 miles. Telegraphy, 300 miles.

### Hudson Strait Expedition, 1927-28

In January, 1927, a decision was reached by the Government to complete Hudson Bay railway and terminals, and to send an expedition to Hudson Bay. The expedition was under the direction of the Department of Marine, and transportation to the bases, erection of the buildings, etc., was carried out under their supervision and direction. The object of the expedition to Hudson Bay was to obtain by air photography and reconnaissance accurate information in regard to ice conditions and to study requirements necessary to ensure safe navigation. The expedition left Halifax on July 17, 1927, arrived at Port Burwell on July 27, 1927, where Base "A" was established. Base "B" was established at Nottingham Island, and Base "C" at Wakeham Bay. The general equipment of the three bases was practically the same and comprised the following: Two Fokker aircraft complete with floats, skis and wheels

## Notes on "Civil Aviation"

^ r landing and all necessary accessories including spare engines. One 30-foot  
i)tor launch, one Fordson tractor, radio apparatus consisting of two gasolene  
tgenes to generate power, with two 150-foot steel masts, gasolene, oil, coal,  
Si)ves, bedding, one skiff, guns, rifles and ammunition. Seven buildings, com-  
l'Sing officers' and mens' dwellings, radio house, storehouse, blubber house,  
id two hangars, were erected at each base. The expedition consisted of 44  
i| ranks. The Department of Marine and Fisheries provided for personnel  
(.iiprising doctors, wireless engineers and operators (for ground commiunica-  
"ns only) storekeepers and cooks. The Royal Canadian Corps of Signals  
'IS responsible for wireless communications and equipment, and provided  
< ^ ^ officer and three other ranks for this purpose. The Royal Canadian Air  
Tce received the major portion of responsibilities in the organization, and  
ljOvided\*6 officers and 12 airmen. The Royal Canadian Mounted Police  
(tailed one member for duty at each base.

(b) The Royal Canadian Air Force

The direction and control of aeronautics in Canada, both civil (Civillian) and military (Service) come under the jurisdiction of the Department of National Defence.

The powers and duties involved are exercised under the direction of the Minister by four separate branches of the Air Services, namely, the Directorate of Civil Government Air Operations, the Controller of Civil Aviation, the Aeronauticaj Engineering Division, and the Royal Canadian Air Force.

The first three of these branches are responsible directly to the Deputy Minister, and information regarding them may be found in the " Civil Aviation section" of this report, and also in the separate " Report on Civil Aviation, 1928, which can be obtained by application to the Secretary, Department of National Defence, Ottawa".

The Royal Canadian Air Force

***The Royal Canadian Air Force is the Military Branch of the Air Service***

The Chief of the General Staff, through the Director, R.C.A.F., administers and controls all military air operations.

The Royal Canadian Air Force has the following composition:

(a) The Active Air Force.

(b) The Reserve.

The Active Air Force

The establishment of the Permanent Active Air Force of Canada consists 176 officers and 641 Airmen permanently embodied for continuous service, and failable for general service, including training and operations for civil government departments.

The strength of the Royal Canadian Air Force was 131 officers and 590 Airmen on March 31, 1929.

Out of this total about half were attached for duty with the other branches of the Air Services.

The Non-Permanent Active Air Force is comprised of such units or detachments and other formations as are from time to time named by the Governor in Council

At present there are authorized 67 Officers and 130 Airmen.

The strength of the Non-Permanent Active Air Force is 46 Officers. These personnel are included in the strength of the Royal Canadian Air Force, shown above

The Reserve

The policy of the department is to create a large reserve list consisting of personnel qualified in the several branches of Air Force duties.

The Reserve will be inactive except for such special courses as may be authorized 'by the Honourable the Minister, though personnel on the Reserve will be liable to call for duty with the Active Air Force.

Headquarters, R.C.A.F.

R.C.A.F. Headquarters is organized as follows:

Director, R.C.A.F.

Assistant Director, R.C.A.F.

Staff Officer Personnel.

## Notes on "Civil Aviation"

Staff Officer Equipment.  
Staff Officer Organization.  
Staff Officer Training.  
Staff Officer Operations and Intelligence.  
Staff Officer Regulations.

R.C.A.F. Station, Vancouver

R.C.A.F. Station, Vancouver, B.C.—The station is well equipped in regard to hangars, shops, and slipways. Barrack accommodation and housing for the personnel are required.

R.C.A.F. duties:—

' (1) Seaplane flying training for personnel of the R.C.A.F., and Civil Government Air Services (ab initio).

(2) Winter training - Officers and Airmen.

(3) Combined operations and training with Naval and Military Forces.

During 1928 ab initio seaplane training was carried out, at which 41 Officers and 15 N.C.O.'s attended, all of whom qualified as seaplane pilots.

R.C.A.F. Station, Camp Borden

The Air Station at Camp Borden carries out training of personnel for *all 16 branches of the Air Service*. During the fiscal year 1928-29 training was carried out as follows:

(a) Refresher flying courses were given to 6 Permanent Officers and N.C.O. Pilots, and 29 Non-Permanent Officers.

, (6) Training for Provisional Pilot Officers—Forty-three Provisional Pilot Officers underwent their first term ab initio flying training, thirty-two of whom passed their examinations at the completion of the term.

Eleven Provisional Pilot Officers attended for the second term of ab initio flying training, all of them successfully completing their second term.

Eight third term Provisional Pilot Officers attended, 7 of whom successfully passed their examinations upon the completion of the course and qualified pilots.

Four of the successful candidates were given further flying instruction and granted Non-Permanent Commissions in the R.C.A.F.

It is expected that about three more of this term will be given commissions in the near future.

(c) Eight Commercial Pilots received flying training and they all passed their tests.

(d) An N.C.O. Pilots' Course was given, fourteen Airmen attending, of whom qualified as N.C.O. Pilots (ab initio).

(e) A Parachute Course was given, at which nineteen Officers and Airmen attended. All qualified.

(f) A Flying Instructors' Course was given, at which 15 Officers attended.

These Officers were classified, or, in the case of former Instructors, reclassified at the completion of the course.

ig)

A Technical Training Course for boys was carried out, and 22 boys attended, all of whom qualified.

(h) Thirty-two Flying Club Instructors received a Flying Instruction Course, twenty-six of whom qualified.

R.C.A.F. Training—Generally

R.C.A.F. training may be divided into two categories: training for Officers and for Airmen. ,

The training for Officers and Airmen at Vancouver and Camp Borden during the year has been most successful, both as regards service personnel and those attached to other Government Air Services.

R.C.A.F. Officers have been attached for courses of instruction at the Royal Military College, Kingston, and elsewhere throughout the country.

Officers of the Royal Canadian Air Force attached for training with the Royal Air Force in England:

Officers Attending {

(a) Royal Air Force Staff College, Andover 2

(b) Flying Instructors' Course— Central Flying School, Wittering 1

(c) Navigation, at Royal Air Force School of Air Pilotage I

(d) Army Co-operation, at Old Sarum, Salisbury 1

(e) Armament Course, Eastchurch 1

(f) Aeronautical Engineering, Imperial College of Science 1

(g) War Staff Course— Royal Naval Staff College, Greenwich 1

Provisional Pilot Officers' Training

## Notes on "Civil Aviation"

The idea underlying the present scheme of the R.C.A.F. Provisional Pilot Officers' training is to obtain, with the minimum of expense, a class of young officer having, in addition to his knowledge of flying, a thorough all-round education, with special qualifications on the technical side.

With this in view, arrangements have been made with the Canadian universities to accept for air force training a number of students in their first year from the Applied Science at Engineering faculties, and train them at Camp Borden during the summer vacations each year of their university course.

A satisfactory response has been made; and numbers greatly in excess of the vacancies apply each year.

A number of Gentlemen Cadets from the Royal Military College are accepted each year in the same way.

The scheme of training is shown in a pamphlet issued on the subject, which can be obtained by application to the Secretary, Department National Defence, Ottawa.

### Training for Airmen

Technical Training of Boys and Airmen at Camp Borden.

This scheme of training was approved on November 5, 1925, and was inaugurated on July 4, 1927.

During the fiscal year 1928-29, 22 boys from several parts of Canada reported at R.C.A.F. Station, Camp Borden, for two months training.

*In order to make available a supply of well-trained air mechanics for Civil Aviation it is intended to increase the numbers attending this course.*

A pamphlet containing information regarding the plan of training for airmen is available and can be obtained on application to the Secretary, Department of National Defence, Ottawa.

### the Combined Operations with the Naval and Military Forces

Seven operations were carried out in conjunction with the military forces, insisting of reconnaissance flights, transportation, and tactical exercises, with total of 126 hours' flying time. One operation of twenty-three hours' duration was carried out in conjunction with H.M.C.S. Vancouver.

During 1928 all phases of Civil Aviation greatly increased.

The Dominion and Provincial Governments extended the range and variety of their operations.

The year has seen a notable increase in the number and quality of commercial aircraft. The result has been a great increase in flying time, particularly in Western and Northern Canada. Three new and important developments have taken place: the inauguration of regular air mail services; the development of flying clubs throughout the country; and the construction of a Mooring Mast, and Airship Base at St. Hubert, P.Q.

### Civil Government Air Operations

The Director of Civil Government Air Operations is charged (under the deputy minister) with the carrying out of all air operations required by any department of the Government.

During 1928 the following departments used aircraft for a wide and varied range of services: Department of the Interior, Marine and Fisheries, Railway and Canals, Agriculture, Indian Affairs, Mines, Public Works, and Post Office Units under the control of the Directorate of Civil Government Air Operations during 1928 were:

- (a) Headquarters, Ottawa, Ont. •
- (b) High River, Alta.
- (c) Winnipeg, Man.
- (d) Ottawa, Ont.
- (e) Dartmouth, N.S.

Forest fire detection operations were carried out for the Department of the Interior, Forestry Branch, over an area comprising 64,534,563 acres of forest land in Manitoba, Saskatchewan, and Alberta. During the fire-hazard season 229 fires were detected and suppression action taken on 160 fires.

## Notes on "Civil Aviation"

All air photographic and air survey operations were carried out in co-operation with the Topographical Survey, Department of the Interior, who receive requests for work, issue the necessary technical instructions and prepare the resultant maps. Close co-operation is also maintained with the survey service of the provincial governments. Eight self-contained photographic detachments were engaged in air photography in various parts of the country. They were controlled by Headquarters, Ottawa, but were attached to the nearest station for stores and accounting purposes.

During 1928 an extensive program of air photography was carried out to meet the demands of the different Government departments. Ninety-eight thousand photographs were obtained during the year of which 17,500 were taken with a camera held obliquely, the resulting oblique views covering an area of 33,800 square miles; and 70,500 with the camera axis vertical, the vertical views covering an area totalling 31,400 square miles. The total flying time for the season, on all operations, was 9,002 hours 28 minutes.

### Ottawa Air Station

The base at Shirley's Bay for summer operations was active from April 1 to December 9, 1928.

The establishment consisted of 12 officers and 45 airmen. 13 aircraft were used. About 1,000 square miles of vertical and 200 square miles of oblique photography were done from this station in the vicinity of Ottawa.

These were more in the nature of training for personnel who had only a limited experience in air photography. Flying was carried out for the purpose of transportation, practice and instructional flying.

Type tests and trials of aircraft instruments, wireless, aerial cameras and photographic films.

Experimental air dusting for the prevention of spruce budworm in the vicinity of western Ontario were carried out under the direct supervision of the officer in charge of forest insect investigation, Department of Agriculture.

Air route investigation flights under the direction of the Controller of Civil Aviation were carried out between Ottawa and Minaki; Ottawa-Halifax; Montreal-Toronto; and Toronto-Buffalo.

### Air Photography

No. 1 Photographic Detachment carried out oblique and vertical photography in British Columbia. Two Fairchild F.C.2.W. aircraft were operated. The total flying time was 211 hours 05 minutes.

No. 2. Photographic Detachment carried out vertical photography in northern and eastern Manitoba and northern Ontario. Two Fairchild F.C.2.W. aircraft were operated. The total flying time was 447 hours 18 minutes.

No. 3. Photographic Detachment carried out oblique and vertical photography in western Ontario, northern Saskatchewan and Manitoba. Two Vickers Vedette flying boats were operated. The total flying time was 327 hours 45 minutes.

No. 4. Photographic Detachment carried out oblique photographic operations in western Ontario, northern Alberta, northern Saskatchewan and northern and central Manitoba. Two Vickers Viking Amphibian flying boats were operated. The total flying time was 359 hours 40 minutes.

No. 5. Photographic Detachment carried out vertical and oblique photography in eastern Ontario and Quebec. Two Vedette aircraft were operated. The total flying time was 325 hours 50 minutes.

### Winnipeg Air Station

The activities of this station were considerably increased during 1928. New aircraft were provided and bases improved by the addition of better buildings, runways, hangars, repair shops and store houses. The operations during the season were carried out successfully. Aircraft were used for the following purposes: fire detection patrols; suppression action on fires located; air photography for surveys; forest sketching; transportation of Indian Department officials; obtaining information regarding the distribution of wheat rust spores; listing growing wheat to prevent rust; transportation and reconnaissance flights for various Government officials and urgent work. The establishment consisted of 25 officers and 72 airmen. Twenty-six aircraft were used. The organization of this station for 1928 was as follows:

Headquarters, with stores and workshops at Winnipeg, and sub-stations at:  
a) Lac du Bonnet; (b) Norway House; (c) Cormorant Lake; (d) Ladder

## Notes on "Civil Aviation"

ake; and detachments as follows: (a) Winnipegosis; (h) Ile-a-la-Crosse; c) Fort Churchill; (d) Wheat dusting detachment.

All bases were equipped with radio, which provided adequate means of communication between the units and headquarters at Winnipeg. The total area of forest patrolled by aircraft was approximately 61,237,737 acres, and during the fire-hazard season 179 fires were detected and suppression action taken as required. A total of 567 flights were made and approximately 162,955 miles were flown. The flying time on forest protection was 2,670 hours 15 minutes. The fire-hazard was high all summer, the season being the worst experienced since the introduction of air patrols.

The Fort Churchill Detachment was formed primarily for the Department of Railways and Canals to transport their personnel into Churchill, and also to make coastal ice patrols on the western coast of Hudson bay, between Nelson and Churchill. The personnel consisted of two officers and seven airmen. Two Fairchild aircraft were used. The total flying time was 554 hours.

The Wheat Dusting Detachment consisted of one Keystone Puffer aircraft, which was used for carrying out experiments for the Department of Agriculture by dusting wheat areas in Manitoba infected by black stem rust, with chemicals. The personnel consisted of one officer and two airmen. The total flying time was 40 hours 20 minutes.

In addition transportation was supplied to the Departments of Railways and Canals, Mines, Indian Affairs, Water Power and Reclamation, and the Royal Canadian Mounted Police.

### High River Air Station ,

High River Air Station was active from March 17, 1928, to December 31, 1928, during which period flying to the amount of 801 hours 52 minutes was carried out. The establishment consisted of 4 officers and 19 airmen; 6 Fairchild Moth landplanes were used. Forest fire protection patrols were carried out over the Bow River, Crowsnest, and Clearwater Forest Reserves, comprising 3,260,822 acres of forest land. Sub-bases were established at Rocky Mountain House and Inver Creek. Aircraft were fitted with radio transmitters and in conjunction with the Royal Canadian Corps of Signals reliable voice communication was maintained from aircraft in flight to the base, up to a distance of 200 miles, during the year an experimental service was started for the protection of a large area of forest land in the Peace River district. Aircraft on this duty operated from a temporary base at Grande Prairie. Eight fires were observed and reported during the season.

No. 6. Photographic Detachment carried out vertical and oblique photography in central and eastern Ontario, and western Quebec. Two Fairchild aircraft were operated. The total flying time was 367 hours 15 minutes.

No. 7. Photographic Detachment carried out vertical photography in Eastern Quebec. Two Fairchild aircraft were operated. The total flying time was 367 hours 53 minutes.

No. 8. Photographic Detachment carried out vertical photography in the Maritime Provinces. Two Fairchild aircraft were operated. The total flying time was 326 hours 25 minutes.

### Flying Operations.

A system of routine and special patrols, for all three bases, was drawn up and approved. The patrols commenced from Port Burwell, October 3, 1927; Nottingham Island, October 11, 1927; and Wakeham Bay, September 1927. Flying was done on pontoons until the first ice appeared in the strait. Flying was carried out whenever the weather was favourable. Fog and strong winds hampered operations and on three occasions aircraft were lost or forced down.

## Notes on "Civil Aviation"

by bad weather. Operation/s continued until August 3, 1928, when navigation conditions rendered further air observations unnecessary. The expedition returned to Halifax, arriving there in October, 1928. The results of the land patrols observing ice conditions has been compiled by the Department of National Defence, together with maps, tables, figures, etc., and the whole transferred to the Department of Marine for information, and with a view to further action by that department. Two hundred and twenty-seven flights were carried out during the period, the total flying time being 369 hours and 10 minutes. Two thousand two hundred and eighty-five photographs were taken.

### Civil Aviation Division

The Controller of Civil Aviation is responsible to the Deputy Minister of National Defence for the administration of the Air Regulations, and for the control of commercial and private flying in Canada; the location and equipment of airways, the construction of airship bases and the oversight of flying clubs. The branch has three divisions. Air Regulations, Airways, and Information.

### Statistics

There were in Canada 54 commercial aircraft operating firms, 264 licensed civil aircraft, 259 licensed pilots, 200 licensed air engineers, and 44 licensed air harbours. The number of flights made in 1928 has increased more than 50 per cent over 1927, the figures being: 1927, 16,748, and 1928, 75,285. Hours flown have risen from 12,070 to 43,071, an increase of over 250 per cent. The increase in passengers carried is particularly encouraging, showing a greater public confidence in air travel. The figures are: 1927, 18,932 passengers; 1928, 74,669 passengers; 1927, passenger miles, 1,424,031; 1928, 2,883,722 passenger miles. In the same way freight traffic has increased from 1,098,400 pounds in 1927 to 2,404,682 pounds in 1928. Mail carried: 1927, 14,610 pounds; 1928, 316,631 pounds.

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### Ontario Provincial Air Service

In Ontario the provincial Government maintains its own air service as a part of the Forestry Branch of the Department of Lands and Forests. This service owned and operated 22 aircraft, and employed 20 pilots and 20 junior engineers. Its main base is at Sault Ste. Marie. The flying operations in this district lying north and west of the Ottawa river, Lake Nipissing and French river were greatly extended in the west part of the province, embracing territory from Port Hope to the Manitoba boundary and extending north to the Berens river. Forest fire detection and suppression patrols, forest type mapping by air photography, sketching for inventory work, and transportation to the outlying parts of this district were carried out in 1928. The main operating bases are at Sudbury, Sioux Lookout, and Orient Bay. The total flying time for the year was 6,227 hours; 4,300 square miles of territory was sketched from the air; 4,800 square miles photographed, and 85 forest fires detected.

### Commercial Companies

In Quebec, the Provincial Forest Service carry out similar work by contract with commercial aviation firms. Their fire patrol system is not on the same scale as in Ontario, but a large amount of forest type mapping has been done. Contracts were let to the Compagnie Aérienne Franco-Canadienne for aerial photography in the Gaspé peninsula, covering an area of 7,550 square miles. Air photography was carried out under contract by Canadian Airways Limited, covering an area of some 2,350 square miles. The Fairchild Aviation Company of Grand'Mère, P.Q., also carried out contracts for industrial companies. In Quebec, nine firms were engaged in mail, express and passenger carrying, instruction, exhibition flying, etc.

In Ontario twenty-five firms were engaged in aviation. A large amount of flying was carried out covering mail, express and passenger carrying, air photography,

## Notes on "Civil Aviation"

exhibition flying and instruction.

In Manitoba, Saskatchewan and Alberta, fourteen companies operated aircraft in passenger, mail and freight transportation, instruction and exhibition flying.

In British Columbia, two companies have done a good amount of flying under contract with the provincial Government, British Columbia Forestry Branch, comprising fishery patrols along the Pacific coast, from Vancouver to Prince Rupert, and forest sketching, air photography and exploration. About 10 square miles of territory was patrolled during the season.

In the Yukon Territories, two companies operated in passenger, express and mail carrying

### St. Hubert Airport and Airship Base

The construction of an airship base and aerodrome at St. Hubert followed the decision of the Dominion to participate in Empire air communications, a triangular site containing 792 arpents was purchased at St. Hubert, some 30 miles east of Montreal. A mooring tower has been erected and equipped with the most efficient machinery obtainable, and construction on the airship base has been proceeding for the reception of the British Airship R.101, which is expected to make its first transatlantic passage in the fall of 1929. Hangar, flood lights, tower obstruction lights and a flashing beacon have been installed. A radio and meteorological observation station have been erected. Progress has been made on the grading, drainage, roads, water supply, etc., on the aerodrome.

A number of commercial aircraft operating companies use St. Hubert for passenger, freight and mail services. A school of flying is conducted and the Montreal Light Aeroplane Club have rented space for their operations. It is the terminal for the International Air Services between New York and Montreal. Landing fees, storage charges and terms on which land may be leased by commercial operators have been drawn up. It

### Light Aeroplane Clubs

To stimulate airmindedness, to promote the knowledge and use of aviation among the rising generation, and to encourage the provision of flying fields, the Dominion Government has lent assistance in the formation of light aeroplane clubs in the chief centres of population. Two light aeroplanes, complete with engines, are issued to each club approved by the Honourable the Minister of National Defence. Each club receives a grant of \$100 for each pupil trained by the club. Each club must provide its own flying field, arrange for the services of an instructor and air engineer and have at least thirty members ready to qualify as pilots, and have not less than ten members already qualified. In the spring of 1928 sixteen clubs were approved and received the grant. Fifteen clubs were active during the year. These clubs have a membership of 3,400. During the first year of operations nearly 10,000 hours were flown. There were 260 absolute soloists; 142 private licenses and 43 commercial licenses have been obtained by members. Provision has been made in the estimates for eight further clubs which will be active early in 1929. It

### Aeronautical Engineering Division

The Chief Aeronautical Engineer is responsible to the Deputy Minister of National Defence for all technical and engineering matters pertaining to the Air Services, and prescribed by the Air Board Act and Regulations thereunder. The whole function of the Aeronautical Engineering Division is to act

as

a consulting capacity for the other branches of the Air Services upon purely technical matters. This division is now organized in three main branches: Research, Airworthiness, and Inspection.

Research

### Research

The most important items during the past year have been the experiment



## Notes on "Civil Aviation"

flights carried out on the "Vista" aircraft, which is a single seater all metal flying boat, with "Genet" engine. This aircraft has shown that it is possible to construct a small metal boat without any serious handicaps due to weight but it has also indicated that a boat of this small size is only suitable for use in sheltered waters, because moderate waves are proportionately very large. These experiments should assist in the production of a small sporting boat when the demand for an aircraft of this type arises.

aircraft, which has been extensively used for photographic work. Following the twin engined "Varuna" it was decided to experiment upon a duralumin hull for a flying boat of this size, and the preliminary work upon the design of such a boat has been carried out with Messrs. Canadian Vickers, who are now designing the "Vancouver" aircraft, which is a twin tractor flying boat with a duralumin hull, equipped with "Lynx" engines. Some work has been done upon the production of the combined ski and wheel, and alternatively upon a combined ski and float. These problems, however, depend largely upon the demand being sufficient to warrant the cost of experimental work.

Airworthiness

The Airworthiness Branch has carried out a large number of regulations to test the airworthiness of aircraft of different types for the Civil Aviation Branch, and this work, although of a routine nature, occupies a considerable portion of the work of the Engineering Branch and is likely to grow with the growth of the industry.

By an agreement with the United States, airworthiness certificates issued by the United States Department of Commerce for aircraft built in the United States, are now recognized for acceptance in Canada, and on the other hand Canadian certificates for aircraft built in Canada are recognized for acceptance in the United States.

This exchange has necessitated a good deal of investigation work upon the methods used by the United States Department of Commerce and those previously used in Canada.

### Inspection

With the growth of the aircraft industry in Canada, the inspection of aircraft during construction for the purpose of granting certificates, has been created.

Aircraft Inspection Detachments are now stationed at Montreal and in the Ottawa district, and provision is being made for the establishment of another detachment in the Winnipeg district.

It has not been the policy of the department to carry out detailed inspection of aircraft under construction, except in the case of new aircraft manufacturing companies, but the inspection has been limited to periodical inspection during the course of manufacture, relying upon the inspection carried out by the manufacturing companies themselves for all detailed inspection.

The Chief Aeronautical Engineer represents the department upon the Canadian Engineering Standards Association and the Associate Air Research Committee, which is one of the committees of the National Research Council.

The Air Research Committee have carried out a number of interesting researches during the past year, including the commencement of the determination of the complete stability of a flying boat type of aircraft. This work is being done under the direction of Professor Parkin at Toronto University, and would be completed during the coming year. In the summer of the past year a visit was made to Europe for the purpose of studying the aircraft industries in various countries and for the purpose of obtaining the latest information that might be employed in Canada.

A great deal of information was obtained that can be used to good advantage, particularly upon the construction of metal aircraft. This division supplied a representative for the International Convention on Civil Aviation held at Washington at the end of the year, when a number of interesting questions were considered.

*Amongst them was the proposal from the Canadian delegation that a real international standard for airworthiness should be set up, or at any rate that the preliminary discussions towards this should be commenced. (is this what was not introduced in 1938-39 ...)*

In the field of lighter-than-air aviation, this division has acted in a consulting capacity to the Civil Aviation Branch and to the Public Works Department upon the construction of the mooring tower and facilities for handling airships at St. Hubert Airport.

## Notes on "Civil Aviation"

These questions were investigated not only in Europe, but also by visit by the Airship Station at Lakehurst during the landing of the Graf Zeppelin, and investigating the facilities provided by the United States authorities on that occasion.

### The Aircraft Industry

The program of construction for 1928 of Messrs. Canadian Vickers included twelve Avro aeroplanes, four new hulls for Viking Amphibians, nine Vedette three-seater observation and photographic flying boats for forest patrol for the Department of National Defence, and other contracts to commercial companies. The Government experimental patrol machine Vigil, intended for the Rocky mountain region, was completed and tested. Thirteen Fairchild five-seater monoplanes were constructed under license during the year. This firm increased the use of metal in aircraft construction.

The DeHavilland Aircraft of Canada Limited established a plant at Malton, Ontario, for the service and assembly of their aircraft. During the year they delivered 62 aircraft to users in Canada. The Moth was extensively used by light aeroplane clubs, and was the type selected by the Government. The Curtis-Reid Aircraft Co., Limited, established an airport at Cartierville, P.Q. Their first product is the Reid Rambler, a two-seater light aeroplane, manufactured entirely of metal and covered with fabric.

The Ottawa Car Company Limited have done considerable reconditioning work for the Government and commercial operators. They have arranged with the A. V. Roe and the Consolidated Aircraft Company of Buffalo for service assembly and distribution of their products.

The Armstrong-Siddeley Motors Limited, Canadian Wright Limited, and the Canadian Pratt and Whitney Aircraft Company, Limited, have established branches for the assembly, service and distribution of their aero engines. During the year 264 aircraft were operated by civil organizations, and 1,000 by the Directorate of Civil Government Air Operations, making a total of 1,264 aircraft used in civil operations. A large number of these are of British and United States manufacture, but there has been a marked increase in Canadian manufactured aircraft.

### REPORT OF THE JUDGE ADVOCATE-GENERAL

#### Courts-Martial

During the fiscal year ending March 31, 1929, fifty-seven District Courts-martial were convened and held, this being a decrease of eighteen compared with the number of such courts held in the preceding year.

Of these courts 51 were for the trial of military personnel and two for the trial of personnel of the Royal Canadian Air Force.

Thirty-five courts dealt with charges of desertion and in thirty-one of these a further charge of losing arms, clothing and equipment was laid.

In one instance the finding and sentence of a court-martial, which had been confirmed, was quashed on the advice of the Judge Advocate-General, and in two other instances it was necessary to quash the conviction on one of several charges which had been laid.

It is evident from a review of the proceedings of all courts-martial held during the last fiscal year, that there has been an endeavour on the part of all officers concerned to improve their knowledge of military law and court-martial procedure, and the number of errors and irregularities which occurred was.

never very great and nor were they of a particularly serious nature. Nevertheless, it is apparent that there should be established a more comprehensive method of instruction in military law and court-martial procedure, together with improved facilities for the dissemination of advice on technical points connected therewith.

## Notes on "Civil Aviation"

In addition to the requisitions prepared at Headquarters, about 8,000 requisitions made out at the different stations, in which units of the Permanent Naval, Military, and Air Forces are located, were also received.

These requisitions

covered supplies purchased or services carried out at outside points.

It may be mentioned that, during the financial year, ninety-five aircraft of different types for use in forestry patrol, photographing, training, and other purposes, were purchased. The engines for a large number of these aircraft were purchased as complete equipment with each machine. In addition separate orders were placed for 21 aeroplane engines.

All supplies purchased, either in England or in United States, for delivery to Ottawa, have to be cleared from customs on their arrival here. During the financial year 872 customs entries were passed.

In effecting purchases competitive tenders were invited in practically every instance, thus affording the trade every opportunity to secure the business and at the same time enabling the department to obtain the supplies required to the best possible advantage. The policy of purchasing stores manufactured in Canada from Canadian material was strictly adhered to and was departed from only when certain stores required were not procurable in Canada - When it was necessary to purchase goods of foreign manufacture preference was given as far as possible to supplies manufactured in Great Britain.

All stores delivered at Ottawa were subjected to a rigid inspection by the departmental inspectors who were guided in their work by sealed patterns, specifications and drawings. In the case of provisions, fuel, and forage, purchased for delivery to points throughout the country, the inspection was carried out under the supervision and direction of the Officer Commanding the Military District, the Naval Store Officers at Halifax and Esquimalt Dockyards, and the Officers Commanding the different Air Stations throughout the country.

1928 : Lloyd Samuel Breadner - Director of the RCAF 1928 – 1932.

1928 : Women over 21 gain the right to vote in England [British Empire ?].

1928 : First flight of the De Havilland 60G "Gipsy Moth" light weight, two-place, single-engine biplane:

- fuselage covered with plywood
- wings and tail surfaces covered with fabric.
- 23 feet, 11 inches (7.290 meters) long
- wingspan of 30 feet (9.144 meters)
- overall height of 8 feet, 9.5 inches (2.680 meters).
- Empty weight of 920 pounds (417 kilograms)
- loaded weight of 1,650 pounds (748 kilograms)
- powered by a 318.09-cubic-inch-displacement (5.212 liter) air-cooled de Havilland Gipsy I inline 4-cylinder direct-drive engine, producing 130 horsepower, de-rated to 100 horsepower at 2,100 r.p.m.
- two-bladed wooden propeller
- cruise speed of 85 miles per hour (137 kilometers per hour)
- maximum speed of 102 miles per hour (164 kilometers per hour).
- Range for the standard aircraft is 320 miles (515 kilometers).
- service ceiling is 14,500 feet (4,420 meters)

The De Havilland 60G "Gipsy Moth" has its roots in the 1912 BE design of Geoffrey deHavilland first shown at the Military Aeroplane competition.

## Notes on "Civil Aviation"

1928 : Cambridge and Oxford in 1925. At this stage the aim of the game was to promote 'air mindedness' and to stimulate an interest in, and research into, matters aeronautical.

Although the UASs were staffed and funded by the Air Ministry, membership involved no Service obligations whatsoever; members were not subject to the Air Force Act and they did not wear uniform.

"Practical aviation" was not seriously addressed by Air Squadrons at British Universities until 1928.

1928 : "Ground Engineers" recognised by the Department of University Extension, University of Toronto - "opportunities for technically trained men. Necessarily an important feature" Source : Bulletin of the Department of Extension and Extension Course Bulletins, September, Opportunities for Graduates in Applied Science and Engineering 1928.

1928 : 10 Canadian flying clubs organized and approved. Canadian air force - an enthusiastic sponsor. each club was issued two training aircraft (DeHavilland DH-60 MOTHS) from RCAF stocks and subsequently received technical advice. The clubs in turn became the nuclei of Auxiliary Air Force squadrons after 1934.

1928 : DND begins flying training courses for flight instructors at camp Borden.

April 1928 : BC Airways purchases a Bill Stout designed 3 engined AT-4 "Tin Goose" in Detroit, Michigan. The AT-4 would carry 12 passengers for the Vancouver-Victoria-Seattle run. registered in Canada as G-CATX (Henry Ford would later purchase Bill Stout's company and build / market the aircraft as the Ford Tri-Motor). The aircraft is collected and arrives via the US on August 7, 1928 (Vancouver Mayor L.D Taylor walks into one of the rotating propellers as he dis-embarks and is rushed to hospital). G-CATX is the first multi-engine all metal monoplane on the register in Canada. Pilot Walker took G-CATX off on August 25th with 5 passengers and flew into a fog bank near Port Townsend Washington. It was seen to turn violently (near the water??), clip a wingtip on the water and cartwheel on August 25th with 5 passengers for unknown reasons while crossing the Juan de fuca straight. 2 bodies and some wicker chars washed ashore, the wreckage was not located or recovered. Henry Ford cabled (the DND) to advise that his AC had "perfected a system to keep an aircraft above the water"... The BOI recommended that amphibious aircraft subsequently be used on the route. United Sates operator Transcontinental Air Transport lost 3 AT-4's in the next 5 months.

1928 : Western Canada Airways begins regular passenger operations.

8 March 1928 : Air Engineer Percy Handford "wished to upgrade his skills to overhaul De Havilland Moths and Cirrus engines at Camp Borden, but was directed to directly contact R.A. Loader at De Havilland in Toronto. Cowley noted that the De Havilland company was "very anxious that the club engineers should be thoroughly familiar with their aircraft...." Squadron Leader Cowley indicated the following situation regarding air engineers' instructional courses in 1928:

- I. *"The only course in mechanics in the Royal Canadian Air Force is the service training given to recruits.*
- II. *It will be necessary, therefore, for your two young men to enlist in the Royal Canadian Air Force for a period of three years....*
- III. *In regard to your mechanic spending a few days at High River, I am to advise that he will be perfectly free to do so but the messing accommodations there are very limited and it will probably be necessary for him to make his own arrangements for living in the town of High River, which is about 1 1/2 miles away from the aerodrome.... The actual date at which your aircraft can be delivered from High River will depend upon the success of your instructor at Camp Borden [i.e. Burton] but the aircraft are at present at High River where they will be erected and test flown. It would, therefore, be in order for your mechanic to report at High River at any time"*

13 March 1928 : First Canadian woman to be issued a Pilot's License : Mrs. J.M Miller

29 March 1928 : Standard Conditions for Light Aeroplane Clubs and Associations Canada specify that<sup>203</sup>:

- A. the club provide:
  - A. a flying field which filled the requirements of the Air Regulations [1920];
  - B. storage for the aircraft and equipment from the Department of National Defence;
  - C. arrange for an air instructor and licensed air engineer;
  - D. have a roll of at least thirty members prepared to qualify as pilots, and
  - E. at least ten members who have already qualified and were "desirous of continuing to fly".
- B. The Department of National Defence would then provide:
  - A. two aircraft and additional necessary equipment;

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<sup>203</sup> Order in Council 24 September 1927 P.C. # 1878

## Notes on "Civil Aviation"

- B. a \$100 grant for each student who qualified for a pilot's license;
- C. periodical inspection of aircraft;
- D. a board of inquiry to investigate any accidents.

25 April 1928 : Charles Lindberg delivers pneumonia serum to US aviator Floyd Bennett in Quebec City, landing on the plains of Abraham.

1928 : Six Avro 504K aircraft decommissioned and sold from RCAF for civilian use.

1928 : Beverley Shenstone joins the RCAF Engineering Student Flying cadet program while at University of Toronto. Becomes Provisional Pilot Officer (PPO) at Camp Borden. Instructed in flying by RCAF officers Ingram and Stafford. Upon graduation Shenston offered a permanent RCAF commission by Sqn Ldr. Shearer. Shenston solos after 9 hrs 4 minutes on an Avro 504N with a Bristol engine. Shortly thereafter Shenston experienced an engine failure : the mechanic replacing a troublesome fuel cock had reversed the position so that on was off and off was on...

1928 : Beverley Shenstone meets J.T "Jack" Dymont at University of Toronto (school of Engineering?)

1928 : Beverley Shenstone graduates University of Toronto school of Engineering (B.Eng ?)

1928 : Beverley Shenston views Curtis HS2L in operation at Temagami, subsequently offered post-graduate scholarship by U of T Professor John H. Parkin (Parkin established Canada's first wind tunnel at U of T) - research into flying boat stability : digest and comprehend the established and latest works on flying boat design using Vickers Vedette at U of T wind tunnel for RCAF Engineering Branch under Wing Co. E.W Stedman. Shenston employs calculus and "Actual Flow" analysis using smoke and tuft testing. culminates in Shenstone's thesis "Certain aspects of the Stability of a Flying Boat". (Shenstone combined aero-dynamics with hydro-dynamics - early work on virtual flow dynamics)

1928 : UK, another important step was taken, which shifted still more responsibility on to the shoulders of the constructors of the aircraft<sup>204</sup>.

1928 : the system of approved designing firms was introduced. The approved designing firm was considered able to make its own design investigations under the general supervision of the Airworthiness Department of the Air Ministry<sup>205</sup>.

13 July 1928 : 13 July – Vickers Vulcan G-EBLB operated by Imperial Airways with a pilot and five passengers crashes near Purley, Surrey while undergoing a test flight from Croydon Airport. As a result, Imperial Airways curtails staff "joy riding" on test flights.

09 August 1928 : Aircraft Accident : G-CARN, a Leoning Cabin Amphibian stalls during a turn, Beaumaris Ontario, Killing 2 passengers, injuring 5.

1928 : Hugh Trenchard resigns as as Chief of Air Staff, his resignation is not accepted<sup>206</sup>.

1928 : First Canadian woman to parachute from an aircraft in Canada (a JN-4) : Mrs. J.M Miller.

20 September 1928 : THE history of flying in Canada is quite unique. It might be described as a mixture of socialism and natural development. The Dominion Government has led the way, but when it has not taken action itself it has granted no subsidies to private operators. It has initiated no mail and transport services by air. There is no clear-cut line between the development of the Royal Canadian Air Force and that of civil flying. Their fortunes have been bound up together ; though now they show a tendency to diverge. So far, aircraft have been used less in Canada for the usual purpose for which other countries have used it, namely for rapid transport on regular lines ; and more for other varieties of purposes which have been less sought after elsewhere. In fact, in the first few years after the Armistice, it may be said that the quality in aircraft which was least esteemed in Canada was its speed; that which was held in the highest regard was its long range of vision.

Another point of interesting peculiarity was that whereas ; most other countries made a start with landplanes, in Canada the great majority of the early work was done with boat seaplanes. In fact,

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<sup>204</sup> Dr. Roxbee Cox , Ph.D., D.I.C., B.Sc, F R.Ae.S., chief technical officer of the Air Registration Board: recalled briefly the history and development of airworthiness regulations- Flight March 1939 page 227

<sup>205</sup> Dr. Roxbee Cox - Flight March 1939 page 227

<sup>206</sup> <http://www.historylearningsite.co.uk/world-war-one/aerial-warfare-and-world-war-one/hugh-trenchard/>

## Notes on "Civil Aviation"

Canada showed an originality of outlook not to be found anywhere else in the world. The unusual course of development of flying in Canada was not due to any desire for eccentricity. It was the outcome of a just appreciation of the conditions, needs, and capacity of the country. It was eminently sane. The Dominion Government never denied that air lines might be advantageous to the country, but it realised that in the early days there was no popular demand for them and that the country could well get on without them. The most productive and populous belt of Canada runs east and west between the Atlantic and the Pacific, and the main demands of this belt are catered for by an excellent system of railways. In this respect the conditions were utterly unlike those in Australia. Other countries started air lines, subsidised by the Government and some started them prematurely — that is to say before the public mind was ready for them. Consequently they were of very small commercial value, though the expenditure was justified on the grounds that it kept alive the flying movement and the aircraft industry, and it provided a full-scale experiment by which it was gradually learnt how an air line ought to be managed. On the whole, these reasons, as applied to France, Great Britain and Germany, may be passed as adequate ; but they did not apply to Canada. There was at first no aircraft industry there to be protected, and there was no compelling need for the Dominion to spend public money on such an experiment. The Government decided that organised air routes were for the time being a luxury which the country could not afford. Yet it must have cost some searchings of heart and some stern self-repression to arrive at this conclusion and put it into practice. Canadian pilots had joined the Royal Air Force in large numbers and had played an especially gallant and distinguished part in the fighting in France. Wherever the initials " V.C. " are known and understood the names of Wing Commander W. G. Barker and Col. W. A. Bishop are famous. All these war pilots returned to Canada anxious to keep on flying. Aeroplanes were cheap, and the public was interested in the novelty. A number of " joy-riding " companies were formed, but once the first interest and curiosity were satisfied the demand waned, and most of the companies had to go out of business. The years of depression followed, but from the flying point of view they were "not so acute in Canada as elsewhere. There was, for one thing, a shorter period in which flying was uncontrolled. Canada led the

way in regard to regulation of air traffic, and was the first country to enact a complete set of air regulations, namely in 1920, and these proved satisfactory from the first in main principles, though details were amended as experience demanded.

There never was in Canada a period when the Government did nothing to keep civil flying alive, while no one else could afford to do anything. Aircraft and equipment to the value of about \$5,000,000 had been presented to the Dominion by the Government of Great Britain and a number of flying boats used by the Royal Canadian Naval Air Service were available. Even before the Armistice had been signed Canadians had perceived that aircraft offered a new and vastly improved method of patrolling the forest to observe outbreaks of fire, and no time was lost in making use of it. An Air Board was formed and in 1919 it was authorised to institute a central civil flying service to supply flying to any other service which required it. This was the novel and unique idea round which practically all flying in Canada has grown up.

The air station was at High River, on the eastern side of the Rockies some 40 miles south of Calgary, in Alberta, was the only one to use landplanes. In all others, seaplanes were the normal aircraft in use, and flying-boats in particular. It was equipped with D.H.4 landplanes with Eagle VIII engines. The other stations, in the early years, were :—

' British Columbia, Vancouver, station at Jericho Beach, English Bay.

Manitoba, Winnipeg, station at Victoria Beach on southern shore of Lake Winnipeg, with subsidiary bases at Norway House, on the north of the lake, and Le Pas, on the Saskatchewan river.

Ontario, Ottawa, station at Victoria Island in winter, and Rockcliffe in summer.

Nova Scotia, Dartmouth.

Quebec, Robertval.

These were all seaplane stations, and in the early days, the American flying-boat H.S.2.L. was largely in use by them. The growth of aircraft in popularity is interesting to trace

in the annual reports on civil flying in Canada. On the one hand there was a body of air enthusiasts ; on the other hand, officials who had to be converted, and seemed dubious as to whether aircraft was not just an ingenious toy.

Intensity of enthusiasm over a novelty sometimes in itself creates suspicion

—most people are apt to shudder when the enthusiast mounts his hobby horse. But aircraft themselves proved the best apostles, and conversion of the doubters was rapid. In 1922, the Forest authorities of the Dominion laid it down that :—

" The essential justification of the use of aircraft in forestry work lies not in any possible economy which may be effected, but in securing a greater degree of efficiency than can be obtained in any other manner. In fire protection, nothing

short of an organisation adequate for all emergencies is worth while as a permanent proposition. The reason for this is that inefficient fire protection is no fire protection at all when it is most needed. A properly functioning organisation is therefore not an ideal, but a necessity. . . . Any method, therefore, within the economic means of this country, which can be utilised to conserve our forest resources from destruction, should and must be adopted. Under the conditions existing in the great northern forest, which forms the northern parts of the Prairie Provinces, the use of aircraft seems to offer the only possible and practicable solution of the problem of fire protection. These forest areas are, in general, uninhabited, isolated from settlement, inaccessible, and at the same time subject to dangerous fire hazard. Distances to be traversed are enormous, no lookout system is possible of development, and in addition, no labour supply is available for fire-fighting."

The fire detection aircraft used by the Dominion Government are the Avro-Lynx (both landplane and seaplane) carrying pilot and passenger, and the Vickers Vedette boat (Lynx) carrying pilot and two passengers. Moths have recently been added to the detection fleet. Detection aircraft are now always fitted with wireless, and by this means still more time is saved in reporting the position and extent of a fire which has been discovered. Previously, of course, the aeroplane had to reconnoitre the outbreak and then fly back to its base and report—which was then an immense saving of time on the old canoe methods. The fire suppression types in use are the Vedette, the Viking-Eagle 9 (pilot and three passengers), and the Vickers Varuna with twin Lynxes which carries pilot and six passengers. These boats hurry parties of fire-fighters up to the neighbourhood of the outbreak and land with them on the nearest suitable lake. The official in charge is then flown over the fire so as to be able to observe its extent and direction of travel, from which he can form his plan of campaign. The next task for the boats is to bring up supplies, both fire-fighting appliances and also tents and food for the men. The whole organisation is like a magical transformation from the old methods. It is not in the least surprising to read that last year there were fewer forest fires in Canada than ever before. surrounding forest aflame. The Winnipeg station operated five summer bases last year. These were : 1. Lac du Ponnet, 70 miles north-east of Winnipeg, for flying over the forests between Lake Winnipeg and the provincial boundary as far north as the Berens river. The flying time was 371 hours. 2. Norway House, on Forestry Island in the Nelson river, about 35 miles from Lake Winnipeg to the north-east. Its flying time was 327 hours. 3. Cormorant Lake, on the Hudson Bay railway to the north of Lake Winnipeg. Its flying time was 322 hours. 4. Ladder Lake, 100 miles north-west of Prince Albert. Its flying time



was 293 hours. 5. Winnipegosis Detachment on an island in the lake of that name. It put in 29 hours, but the fire hazard was found to be low, so the aircraft were transferred to Ladder Lake. Organisation

The forest fire work was at first the most important work undertaken by aircraft in Canada, and therefore it has been dealt with first. Before proceeding to deal with other flying activities, some account should be given of the flying organisation and its growth.

After the war the Canadian Air Force (now the Royal Canadian Air Force) was organised on a militia basis. Camp Borden was the air force training base. The idea of a permanent full-time air force engaged in training for war was not approved. On the other hand, no subsidies were paid to any commercial flying company. Therefore an ingenious compromise was evolved, whereby the officers of the air force when not undergoing training should be employed as civil servants in the Civil Operations Branch under the Air Board to provide flying services to any government department which required it. When the pilots went to Camp Borden for training or refresher courses, they were granted leave from their civil duties. In this arrangement, as in others, the history of flying in Canada is unique.

The Air Board Act was passed in 1919, and the first system was that the Board's functions were performed by three directorates : (1) the control of civil aviation, dealing with the air regulations and all which concerned them ; (2) the conduct of Civil Government operations, e.g., forest fire protection; and (3) the administration of the Canadian Air Force. This dual administration of the same set of pilots was found to have disadvantages. Both the C.A.F. and the Civil Operations Branch had establishments at Camp Borden. The shops and stores were on a civil basis, while the training was under Air Force discipline and direction. It was also found that the Air Force training and administration could not be carried out with maximum efficiency by a nonpermanent staff.

In June, 1922, a change was made. The Director of the C.A.F. was made responsible for Air Force training and organisation as well as Civil Government operations. The pilots and mechanics engaged in the forest fire patrols and work for other departments were no longer regarded as civil servants ; they thenceforth carried out their civil work in their capacity as officers and airmen of the Air Force.

A parallel to this arrangement would be difficult to find in modern times. It was as if all public works in Great Britain were carried out by the Royal Engineers. The system has, however, proved elastic. So far from stifling private enterprise, as some may have feared that it might do, it actually kept flying alive in Canada when nothing else could have done so. It provided proof, first to all official circles, and then to the public in general, that aircraft could perform wonderful services to the public. It bridged over the period of depression and suspicion. Finally, as the time grew ripe for civil commercial bodies to take over the work, the Royal Canadian Air Force has been ready to withdraw in their favour.

The present position is that in the Prairie Provinces—namely, Manitoba, Saskatchewan, and Alberta—which are naturally the least developed, the natural resources of the forests, etc., are still protected by the Dominion Government through the Royal Canadian Air Force. Ontario, Quebec, and British Columbia all pay for their own provincial flying services. The two latter used to employ the R.C.A.F. to carry out most of their flying work on a repayment basis.

Ontario maintains its own provincial flying service. All three contract out some of the work to civil firms. The situation created by the Government's demand for flying services was naturally an incentive which brought commercial flying companies into existence. The success of the Government civil operations likewise encouraged lumber firms and pulp firms to make their own arrangements for air surveys and air supply services. They sometimes established their own flying branches, but more usually contracted out the work to an established flying concern. Thus a natural and healthy growth is the result of the lead given by the Dominion Government. Last year there were 20 civil concerns [private operators] operating in Canada with more or less success.

#### The Smuggler and the Seaplane

There is no better subject for a boys' story than a tale of smugglers. But for sheer romance the tale of the Smuggler and the Seaplane is not equalled even by the supernatural horror of "The Smuggler's Leap" in The Ingoldsby Legends, when

"Down they went—o'er that terrible fall—  
"Horses, Exciseman, Smuggler, and all ! ! !"

The smuggling which takes place at Vancouver is not of barrels of rum, but of packets of opium and cocaine brought on steamers from China, and in great demand in the opium dens along the Pacific coast. The lascars and others who bring it are similar in greed but different in methods to the redoubtable Smuggler Bill of the Legend, while the "Exciseman Gill" is mounted, not on a terrible Dun horse with smoking nostrils and blazing eyes, lent by the Devil, but on a flying-boat from Jericho Beach. Truth has truly been said to be stranger than fiction.

#### Dusting Crops

The use of aircraft for dusting crops in order to destroy pests is rather a recent development. It promises very well, but more experience in carrying it out is required. Last year, two important experiments were carried out by the R.C.A.F. on behalf of the Department of Agriculture. The pests which were attacked were the spruce budworm and the wheat stem rust.

A few years previously, an outbreak of spruce budworm in Quebec and the Maritime Provinces (New Brunswick, Nova Scotia, and Prince Edward Island) killed a very large part of the fir and red spruce, and was described as probably the most destructive infestation of the sort which has ever occurred. It seems that in any sort of difficulty nowadays in Canada, the department concerned calls in the R.C.A.F. The most hopeful method of dealing with the pest was by dusting areas with poison dust distributed from an aeroplane. Experimental plots were chosen, and a Keystone Puffer aeroplane fitted with a hopper was sent down. Several difficulties had to be faced. The budworm feeds by boring into the buds before they have

opened fully, and so is largely protected from the dust. However, the tests were carried out, and useful lessons were learnt as to the method of operation. The machine flew at 95 m.p.h., and it was found that it had to keep very low above the tree tops. Quite windless weather was also necessary, or else the poison was spread too widely to be effective. Wheat dusting with sulphur to destroy stem rust was also tried in northern Manitoba, also with a Puffer aeroplane, and again good results are hoped for when the method of operation has been elaborated as a result of the experiments.

#### Hudson's Strait Expedition

(See Map on page 8)

Last year, the Dominion Government, having decided to complete the Hudson's Bay Railway, despatched an expedition to Hudson's Strait to make an aerial study of the ice conditions and movements. Three flying bases were established in the strait, each equipped with two Fokker Universal aeroplanes, with wheels, floats, or skis, as required. The air force officer in command was Sdn.-Ldr. T. A. Lawrence, and the Air Force personnel numbered about 20. The expedition assembled at Halifax, and on July 17, 1927, sailed for the strait in the ice-breaker "Stanley," accompanied by the freighter "Larch." A Moth seaplane was carried on the deck of the "Stanley" to assist in finding the bases which Base "A" was at Port Burwell, on the promontory east of Ungava Bay. Base "B" at Nottingham Island, at the western end of the Strait, and Base "C" at Wakeham Bay, on the southern shore, about half-way between the other two. Regular flying patrols commenced on September 20. Before that time, it was known that there was no ice in the Strait. On November 16, floe ice was first reported off Nottingham Island. It was found that the ice forms first at the west end of the Strait and works eastward. In all, 42 flights were made. Fog prevented flying on a number of days. The Moth proved invaluable for reconnaissance work, but was, unfortunately, wrecked by a sudden storm when moored out in Wakeham Bay. One Fokker was also lost. It was being flown by F/O. A. Lewis, with a Flight-Sergeant and an Eskimo guide known as One-eyed Bobby, when it was forced to land on ice floes in the Labrador current. The crew had to abandon the machine, but after a fortnight's hard struggle they got back to safety. The five remaining Fokkers are to fly back to Ottawa in formation, some time in September, from Ungava Bay across northern Quebec to James Bay and Moose Factory and down the Ottawa river, a flight of 1,200 miles. The results of their survey are understood to have been quite satisfactory.

#### Air Mail Experiments

For some years past the Canadian Post Office has authorised

the carriage of mails by air, without taking any initiative in the matter. The first such service was one between Haileybury in Ontario to the Rouyn goldfields. This was carried out by a Vickers Viking. Other early services of a similar description were between Sioux Lookout and Red Lake, Whitehorse and Keno in Yukon, Carcross in Yukon and Atlin, B.C. Despite the difficulty of the conditions these services were carried out very successfully without any Government support. By dint of experience, Canadian pilots and mechanics are now experts at keeping their engines running, however low the temperature. It is now held possible, though not a simple matter, to run air mails all the year round in Canada.

Occasional services to outlying parts such as the Yukon and Mackenzie river basin are considered very desirable.

Frequent bad weather must be expected, but even an irregular air mail which is dependent on the weather. Four such mail contracts were granted last year. These were :—(1) The Canadian Transcontinental Airways of Quebec received a contract to carry mails up to 1,500 lbs. weekly between Murray Bay and Seven Islands (260 miles) on the northern shore of the estuary of the St. Lawrence river, with an extension once a month from Seven Islands to Port Menier in the large island of Anticosti (90 miles). This service started last December. Fairchild monoplanes with Wasp engines were used.

(2) Moncton, in New Brunswick, to Magdalen Islands, in the Gulf of St. Lawrence. The same firm secured the contract for this service, and the same type of aircraft is used. The distance is 120 miles. The service opened last winter, and never before had the islanders received mails in the winter.

(3) Leamington to Pelee Island. This is a short service of 22 miles. Pelee Island on Lake Erie is the southernmost point of Canada. Ice often interrupts communications with the mainland. The contracting firm is the London Air Transport. The type of aircraft used is the Waco 9, with Curtiss OX5 engine. Four trips a week are made.

(4) Rolling Portage to Red Lake. This service provides for a round trip of 300 miles connecting Red Lake, to the east of Lake Winnipeg in Manitoba to Rolling Portage and Woman Lake. The contractors are Western Canada Airways, Ltd., of Winnipeg, a firm which has been operating in that district with great energy and efficiency for the past 18 months.

Regular schedule services between large towns are considered more difficult to organise, on account of the extreme difference of conditions in Canada in winter and in summer. A summer service would be easy, especially in the central parts of the country. The crossing of the Rockies is a problem, though not an insuperable one ; while fog, the worst

drawback of all, is prevalent on both coasts. As far west as the Ontario-Manitoba boundary seaplanes could be used in summer and ski-planes (if we may coin that word) in winter. In spring and autumn (the "fall"), however, only landplanes are possible, and their use implies an elaborate ground organisation, and the preparation of numerous aerodromes and landing grounds. Here again, while the matter would be an easy one so far as the Prairie Provinces are concerned, the mountains present a new set of problems. It has been decided not to rush impetuously at a trans-Canada air mail, but to build up by degrees. A start has accordingly been made with an experimental service to speed up the mails between Great Britain and Montreal. An aeroplane has been making a connection at Father Point in Rimouski, P.Q., on the southern shore of the estuary of the St. Lawrence river, with incoming and outgoing steamers. Though seaplanes were used on the first flights, the conditions on the estuary are not suitable for that type, and a series of aerodromes has been established so that landplanes can be used. Some of these flights shortened the time of delivery of the mails by as much as four days. Consideration has also been given to services between Winnipeg and Calgary (a most ambitious mileage), Montreal and Winnipeg, Montreal and Halifax. It is to be noted that a mail contract does not include a subsidy. In connection with air mails it should be mentioned that a mooring tower for airships is being erected at the St. Hubert aerodrome outside Montreal. The intention is that R.100 shall make a trip to Montreal next summer.

Civil Operating Companies

There are over a dozen major flying companies in Canada, and some brief mention may be made of the following :—

(1) Canadian Airways, Ltd.—This firm has its headquarters at Three Rivers, P.Q., and has carried out several contracts

for Quebec Province. It carried out the experimental mail nights between Montreal and Father Point for the Post Office.

(2) Canadian Transcontinental Airways, as mentioned above, holds two of the current mail contracts.

(3) Fairchild Aviation, Ltd., has its main base at Grand Mere, P.Q., and its main work is aerial survey and photography. It carried the mail from Haileybury to Rouyn

before the railway reached the latter town. It has carried out fire patrols for a paper company. It uses various types of aircraft, among others Aeromarine and Curtiss flying-boats, the Huff-Daland float-plane, the Yickers Vedette, and the Fairchild monoplane.

(4) Brock and Weymouth, of Canada, is a branch of a Philadelphia firm, which specialises in stereoscopic air photography.

(5) Patricia Airways and Exploration Co., Ltd., has been

operating a service to the Red Lake mining area from Haileybury and Sioux Lookout, using a Lark aeroplane and two Stinson seaplanes.

(6) London Air Transport, Ltd., as mentioned above, operates the air mail from Leamington to Pelee Island.

(7) J. V. Elliot Air Service does mixed flying work with 10 aircraft in Western Ontario. During last year the machines of the company photographed 4,200 sq. miles. Flying instruction

is given, and exhibition flying is also part of the programme.

(8) Canadian Air Services, Ltd., has a very popular and successful flying school at Peterborough in Ontario, and also does some air photography.

(9) Western Canada Airways, Ltd., in addition to carrying the air mail between Rolling Portage and Red Lake, does extensive air transport in northern Ontario, Manitoba, and Saskatchewan. The Western Canada Airways, Ltd., was incorporated under Dominion charter, in December, 1926, for the purpose of engaging in an entirely, and at that time, little known, venture in Canada, namely, commercial aviation.

One Fokker Universal four-passenger monoplane (Wright "Whirlwind") was purchased and flown from New York to Hudson, Ontario, a northland outpost and arrived there on Christmas Day, 1926. There, at Hudson, a temporary base was established. Three men were in charge : Capt. H. A. Oaks, formerly R.A.F. and Canada's premier commercial pilot ; S. A. Cheesman, aero engineer, and J. A. MacDougall, secretary-treasurer of what is now the country's largest commercial air service.

A service was immediately inaugurated between Hudson and the active gold-mining areas in the Red Lake district, and daily trips were made when weather was not too severe and visibility permitted flying. This winter flying was accomplished on skis, made of tempered wood which proved very effective.

So successful were the Airways in the development of skis for winter flying that Bernt Balchen, Floyd Bennett and the crew of Commander Richard E. Byrd's tri-motored Ford plane flew to Winnipeg last April to secure a set of winter undergear and to test it in northern Canada winter conditions.

The Byrd plane, at that time, was being tested for its projected flight to the South Pole regions this autumn.

Instant success then greeted the first small efforts of the Airways at their one base, Hudson, Ontario. It soon became apparent that one machine could not cope with the rapidly increasing demand for the aeroplane, and in February, 1927, two additional Fokker Universals were purchased and flown from New York to Hudson.

In March, 1927, at the urgent request of the Government's department of Railways and Canals, a contract was entered

into for the transportation of eight tons of material and equipment and 14 men from Cache Lake on the Hudson's Bay railway, under construction, into Fort Churchill, which contract was to be completed before the spring break-up. The transportation of this material and these men was effected in record time and under unprecedented conditions, the severity of the winter weather leaving its mark on personnel and machines. The country over which it was necessary to fly—about 1,000 miles from point to point—was uninhabited and landing places were few and hazardous. Notwithstanding these difficulties, however, success accompanied the fulfilment of the exacting contract, and the Western Canada Airways was established in official and public esteem as a reliable, swift, and sure means of communication with areas in Canada ordinarily reached from civilization only by the slow, painful progress of dog team and sled—a means of transportation which takes months to reach areas served in a few hours by the aeroplane. While the Churchill contract was being filled, a machine left at Hudson for zone work was keeping up regular service between civilization and the mines, taking in mining engineers, equipment and, in several cases, heavy machinery for emergency repairs. Between the break-up period (when the ice leaves the open water) and the opening of navigation all machines were converted from ski landing gear to floats for summer work which is carried out on water. On June 1st, 1927, the Airways enlarged the scope of their operations by opening a base at Lac Du Bonnet, gateway to the mining belt of Central Manitoba, and not far from Winnipeg. The base was for the express service of prospectors, mining men and the companies operating in this territory. Machinery, supplies and mail were carried in on regular schedule, saving much time for the companies involved. A mining deal of great importance to the development of the Northern Manitoba properties was put through during the summer of 1927, affecting copper zinc and gold areas at Cold Lake, in the far north, and in this connection the company was approached by the Sherritt-Gordon Mines Limited as to transportation of the necessary equipment and men to carry out the contract which consisted of transporting by air 35 tons, including petrol, diamond drills, supplies, and 40 men. This was completed in record time. In one case a large diamond drill defied, for a time, the efforts of one machine to take it in to the mines. It was taken apart, however, and the one machine, making three trips, finally completed the task of delivering it to its destination. ~ The company now has about 30 machines, including two Fairchild monoplanes, six Avro Avians, and a fleet of Fokkers.

Two de Havilland " Moths " are used at the training school while the Fairchild's are kept for communication purposes and inspection trips by officers. Twelve Fokker super-Universal monoplanes (Pratt and Whitney " Wasp " 400 h.p.) twelve Universal Fokker's (Wright "Whirlwind" 200 h.p.) and one tri-motored Fokker monoplane (three " Wright Radials " 200 h.p.) make up the operating fleet. Quite recently this

firm is stated to have bought up Pacific Airways Ltd., of British Columbia, and to be intending to run a triangular service between Vancouver, Victoria, and Seattle, using nine aeroplanes for the work of one round trip daily. This firm is full of enterprise and is an excellent example of success unsupported by a Government subsidy.

(10) Pacific Airways, Ltd., whose incorporation with Western Canada Airways has recently been announced, has done good work with one H.S.2L boat on contract for the Department of Marine and Fisheries, and also for the B.C. Forest service. (11) Dominion Airways, Ltd., did wonderful work for the Forest Service of British Columbia with one Moth seaplane.

A penalty clause was inserted in the contract for failure to carry out the programme each day, but the Moth never failed. Twenty fires were detected during the season last year.

(12) Yukon Airways & Exploration Co. operated the services between Whitehorse and Keno as well as between Carcross and Atlin, which were mentioned above. The company was allowed to use its own mail stamps. A five-seater Ryan cabin machine was used, and flights were made with the temperature 50 deg. below zero.

THE air services of Canada, which form part of the Department of National Defences, consist of:  
The Directorate of Civil Government Air Operations.  
The Controller of Civil Aviation.  
The Aeronautical Engineering Division.  
The Royal Canadian Air Force.

The Directorate of Civil Government Air Operations  
The Directorate of Civil Government Air Operations  
administers and controls all air operations carried out by State aircraft other than operations of a military nature.

Under the Director are :—

Officer i/c Civil Air Operations.

Officer i/c Aircraft Equipment and Stores.

Officer i/c Administration, Organization, Personnel.

Services, with subordinate officers.

There are air stations at High River, Alta, Winnipeg, Man., Ottawa, Ont., and Dartmouth, N.S., with a depot and photographic section at Ottawa, and sub-stations or detachments



at various points in Saskatchewan and Manitoba.

There are also eight photographic departments for all the Provinces except B.C. and P.E.I.

#### Controller of Civil Aviation

The Controller of Civil Aviation is responsible for the administration of the Air Regulations, and such other duties as the Honourable the Minister may direct.

Under him are a Superintendent of Air Regulations and a Superintendent of Airways Examination of Personnel and Inspection of Aircraft. — Air Regulations require that all pilots, air engineers, aircraft and air harbours in Canada shall be licensed by the Controller, of Civil Aviation, and, under instruction, by approved examiners from Air Force stations

#### Aeronautical Engineering Division<sup>A</sup>

The Aeronautical Engineering Division is required to act in a consultant capacity respecting all technical and engineering matters pertaining to the Air Services and the carrying out of the duties prescribed by the Air Board Act and regulations thereunder. The division is in charge of the Chief Aeronautical Engineer and is divided into three main sections as under.

(i) Research.—The Research Section is mainly responsible for the preparation of specifications for new types of aircraft and aircraft accessories, the supervision of type trials for new types of aircraft and of the trials of aircraft which have been modified ; the reduction of these results to standard conditions for comparison purposes ; the issuance of modifications found desirable either for the purpose of airworthiness or to meet certain service conditions ; the design of special pieces of equipment, such as camera mounts, skis, etc., the collection and dissemination of technical information, including the issuance of information circulars.

(ii) Airworthiness.—Air Regulations, 1920, require that before an aircraft can be operated commercially in Canada or a private aircraft can be operated across the international boundary, the aircraft must be certified as airworthy. The Airworthiness Section is devoted entirely to checking the strength of commercial, private and Air Service aircraft.

(Hi) Inspection.—The inspection of aircraft during construction is carried out by the Aeronautical Inspection Department, by means of small detachments of officers and N.C.O.'s stationed permanently at the works of the various manufacturers. The administration of these detachments is carried out from headquarters, and all instructions are issued from headquarters. The work of the Inspection Section at headquarters consists in issuing instructions to inspectors, particularly instructions with regard to new processes and new materials; carrying on correspondence upon queries that arise in the course of inspection ; testing materials submitted by contractors to see that they meet the necessary

specifications; correspondence through the Intelligence Officer with the Air Ministry upon the subject of new specifications and materials ; the study of new processes in manufacture ; the correspondence relating to the allocation of inspection duties, particularly the decision as to whether parts shall be inspected at source or on receipt.

The Royal Canadian Air Force

The Royal Canadian Air Force administers and controls all military air operations. The policy of the Royal Canadian Air Force is as follows :—

- (a) To develop and maintain air power in Canada.
- (b) To provide adequate training facilities for all Government air services.
- (c) To provide a nucleus Air Force round which service units can be formed in the event of war.
- (d) To build up a reserve of pilots and mechanics.

In order to provide effectively for the carrying out of these duties and to ensure that too great a variation in procedure does not exist between the R.C.A.F. and the R.A.F., the more established procedure of the R.A.F. in respect to administration, stores and equipment, is being adhered to as closely as conditions permit. The R.C.A.F. is, therefore, profiting by the experience of the older and larger service, the R.A.F., and in the case of emergency a closer understanding and co-operation will be existent between the two forces.

Organisation.—The R.C.A.F., as the strictly military branch of the air services, comes under the Chief of the General Staff. The R.C.A.F. headquarters at Ottawa consists of a director, an assistant director and six staff officers, the duties being divided under the heads of:— Organisation and staff ; Training ; Operations and intelligence ; Regulations, Personnel ; Equipment.

The principal station is at Camp Borden, Ontario, with another station at Vancouver and a communication flight at Ottawa

R.C.A.F. Liaison Office, London, England.—The R.C.A.F. Liaison Office is in charge of an officer, permanent R.C.A.F., with an under-staff of civil employees, and is maintained as part of the office of the High Commissioner for Canada, but is housed in the Air Ministry, London, England.

The duties which devolve on this officer and his staff consist of the collection and transmission of intelligence of all kinds between the R.A.F. and the R.C.A.F. By reason of his location, the Liaison officer has ample opportunity to permit his keeping 'in touch with the latest developments in aviation in Great Britain and Europe for communication in Canada.

Selection of Personnel.—The nature of the equipment used in the R.C.A.F. requires a high standard of technical knowledge on the part of all ranks in the service. It is the policy of the R.C.A.F. to secure officers and airmen from the following sources :—

Officers.—From gentlemen cadets who have graduated from the Royal Military College and from students of recognised universities who have attained their degree in applied science of engineering.

Airmen.—From the ranks of the skilled artisans of industry

and from the graduates of certain technical schools where they receive special training.

Training.—To fit the personnel of the R.C.A.F. to carry out their varied duties efficiently, almost endless training is necessary. The greater part of this training is carried out at Camp Borden, though personnel are also trained at Vancouver, at commercial plants, at universities, and in the Royal Air Force. An outline of some of the training is as follows :—

(i) *Ab initio* Flying Training :—*Ab initio* flying training is given to provisional pilot officers and N.C.O.'s selected for training as pilots. In accordance with the stated policy for the selection of officers for the R.C.A.F., to obtain young men having a sound education, with special qualifications on the

technical side, arrangements have been made with recognised universities to obtain a number of students of applied science and engineering faculties and train them at Camp Borden during the summer vacation. A number of gentlemen cadets from the Royal Military College are accepted each year in the same way. During training they are granted the temporary rank of provisional pilot officers.

The course of training consists of three terms, each of three to three and a-half months' duration (approximately May 15

to September 1) in three consecutive years.

On completion of the Provisional Pilot Officers' Course, successful candidates are eligible for :—

- (a) Appointment as pilot officers in the Permanent R.C.A.F.
- (b) Appointment as pilot officers in the Non-Permanent R.C.A.F.
- (c) Transfer to the Reserve of Officers.
- (d) Employment in the flying capacity in civil aviation.

This scheme of training has been in force since 1923 and while the numbers selected each year have been limited, gratifying results have been obtained.

The training of N.C.O. pilots was authorised in November, 1926. During the winter 1926-1927 four N.C.O.'s qualified for their wings. At present there are six N.C.O.'s undergoing *ab initio* training and should qualify for wings in the near future.

(ii) *Advanced Flying Training* :—When a pupil qualifies for pilot's wings he is far from being a fully trained pilot; it is proposed, therefore, during the present year to give 10 to 15 officers advanced training at Camp Borden. This course will include flying on the latest training and service types and advanced instruction on service subjects, such as Army Co-operation, Armament, Air Pilotage, etc. The majority of these officers will be P.P.O.'s who qualified for wings during the summer of 1927.

(iii) *Service Flying Training* :—Up-to-date service aircraft will be available this year for the first time in R.C.A.F.

history. It is proposed to organise a Service Squadron at Camp Borden consisting of one Flight of fighting aircraft,

one Flight of Army co-operation aircraft, and one Flight of photographic aircraft. Training will commence as soon as possible, and will continue until the personnel of the squadron have attained a high degree of efficiency in their respective work. The methods of training adopted in the R.A.F. will be followed as closely as possible.

(iv) Refresher Flying Training : — Refresher training is carried out periodically at Camp Borden for the personnel of the R.C.A.F. and the Directorate of Civil Government Air

Operations, to improve the standard and to permit personnel employed on other duties to become familiar with the latest developments and methods in the varied lines and subjects required of Air Force personnel.

In addition to service personnel, a large number of commercial pilots have been given refresher courses at Camp Borden during the last four years.

(v) Unit Winter Training: — During the winter when ab initio flying training and operational flying is not being carried out, officers and airmen, not attending courses, are given instruction at their units, on service subjects. These courses are arranged to interfere as little as possible with routine duties.

(vi) Technical Training for Boys : — With the expansion of the Air Services there arose an important factor in respect to the supply of young and semi-trained airmen. Technical schools throughout Canada have been asked to train boys in aeronautical subjects with a view to enlistment in the R.C.A.F. when of age. This training is being carried out along the following lines :

The technical school course for boys is usually of three years' duration, the first year being the same for all courses.

In the second year, boys who have completed their second year at technical school, and are considered suitable for the particular trade specified in the quota, are enlisted in the non-permanent R.C.A.F. They are enlisted as " Boys " if

between the ages of 16 and 18 years, or as " Aircraftmen 2nd class " if between the ages of 18 and 24 years, and are

attached to an R.C.A.F. unit for instruction during the summer vacation. Having successfully completed their technical school training they are enlisted in the permanent R.C.A.F. after having passed the necessary trade tests. The first course, consisting of 19 boys, started on July 1, 1927. and 16 boys successfully passed the first period of training.

In order to foster and further the co-operation of technical schools, a bond of \$100 is to be given to schools from which airmen have qualified and been enlisted in the permanent R.C.A.F.

(vii) Civilian Flying Training : —On the recommendation of the Controller of Civil Aviation, a limited number of pilots from commercial companies, the Ontario Government Air Service, and Flying Clubs, are given refresher training and training for flying instructors.

(viii) Special Courses : —rNumerous courses have been arranged lor by the K.C.A.F. lor the different branches of

the Air Service in 1928. These include :—

For the Civil Government Air Operations Branch :—

Specialist training on enlistment (7 months) Storekeeping (1 month), Training Pool (1 year), Seaplane training (2 months), Advanced training in Navigation, Cloud Flying and Photography (5 months), Airmen Pilots ab initio (6 months),

Advanced training for ab initio pilots (1 year) (Reserve).

For the Controller of Civil Aviation Branch :—

Commercial Pilots (1 month), Flying Instructor's Course ^or Commercial Pilots (1 month), Flying Club Instructors

(1 month). For the R.C.A.F. :—

Service Training Squadron (1 year). Specialist Training on enlistment (7 months), Army Co-operation (1 month), Storekeeping (1 month), Training Pool (1 year), P.P.O. training (3 months), Boys' technical training (2 months), Staff College Preparatory, Kingston (3 months), Artillery co-operation (Army) (15 days), Auxiliary (Borden) (1 month), Auxiliary (local) (14 days), Miscellaneous (Wood Technical, parachutes, etc.) (as long as necessary).

These courses provide for the training of 268 officers, commercial pilots and flying club instructors, and 264 N.C.Ob., airmen and boys.

Selected officers of the K.C.A.I', also attend courses in England as under :—

Imperial Defence College (1 year), R.A.I". Staff College (1 year), Royal Naval Staff College (1 year), Army Co-operation (3 months), Armament (6 months), Flying Instructors (3 months), Air Pilotage (3 months), Aeronautical Engineering (10 months), Storekeeping (1 year), Wireless (7 months).

Exchange of Officers. —An exchange of officers with the Royal Air Force for a period of two years is being carried out under the following categories :—

1 seaplane pilot.

1 stores officer.

1 Engineer officer on aircraft inspection work

These officers of the R.C.A.F. are employed as regular officers of the R.A.F. and at the conclusion of their period of attachment return to Canada with a knowledge which can be embodied in the R.C.A.F. procedure, and will doubtless prove of extreme value. At the same time the R.A.F.

officers return to England with first-hand information of Canadian conditions and the spirit of co-operation within the

Empire is further developed.

#### AIR SERVICES.

The Royal Canadian Air Force

Director (Acting), Wing-Commander L. S. Breadner,  
D.S.O., p.s.a.

R.C.A.F. Training Stations

Camp Borden, Ont. Officer Commanding, Wing-Com-  
mander G. M. Croil, A.F.C., p.s.a.

Vancouver, B.C. Officer Commanding, Flying Officer  
A. H. Hull.

R.C.A.F. Communication Flight, Ottawa. Officer-in-  
Charge, Flight-Lieut. H. W. Hewson.

Civil Government Air Operations

Director, Wing-Commander J. L. Gordon, D.F.C., A.D.C.,  
p.s.a.

Stations

Winnipeg Air Station, Man. Officer Commanding, Flight-  
Lieut. L. F. Stevenson.

High River Air Station, Alta. Officer Commanding,  
Flight-Lieut. G. V. Walsh, M.B.E.

Ottawa Air Station, Ont. Officer Commanding, Flight-  
Lieut. R. S. Grandy.

Dartmouth Air Station, N.S. Officer Commanding,  
No. 1 Depot, Ottawa, Ont. Officer Commanding, Squadron  
Leader D. C. M. Hume.

Photographic Section, Ottawa, Ont. Officer Commanding,  
Flight-Lieut. E. R. Owen.

Hudson Straits Expedition. Officer-in-Charge, Squadron  
Leader T. A. Lawrence.

Aeronautical Engineering

Chief Aeronautical Engineer, Wing-Commander E. W.  
Stedman, O.B.E.

Civil Aviation

Controller of Civil Aviation, J. A. Wilson, Esq.  
Superintendent, Air Regulations, Squadron Leader A. T.  
Cowley\*.

Superintendent, Airways, Squadron Leader J. H. Tudhope.  
H.E. Lord Willingdon, J.G.C.S.I., G.C.M.G., G.C.I.E., G.B.E., Governor-General.

The 15 " approved " clubs have already been formed, and  
several are now "going strong" turning' out pilots—as we  
have reported in previous issues of FLIGHT. The " fifteen"  
are located at the following centres :•—

Montreal.

Ottawa.

Toronto.

London, Ont.

Winnipeg.

Halifax.

Granby, P.O.

Hamilton.

Border Cities (Windsor).

Kegina.

Moose Jaw.

Saskatoon.

Edmonton.

Vancouver.

Victoria.

In addition to these approved clubs, others, as in the Mother Country, are being formed to the extent of a dozen or so, in various parts of the Dominion. One, for instance, has been formed in Ouebec City, but is, we understand, without an aerodrome ! Others have been formed at St. John, N.B., and Kingston, Ont. Anyway, the Club movement is progressing as rapidly as a Canadian forest fire, and private flying is, as a result, growing apace also. Needless to say, the D.H. " Moth "—which is used extensively by the Clubs—is breeding in large numbers, as is recorded elsewhere in this Canadian section of FLIGHT.

Although the " Moth " is so ably fulfilling the needs in Canada of the private owner, the club, the Air Force, and others who require a two-seater, it must not be imagined that the de Havilland Company does not cater for freight and transport carrying on a larger scale. The D.H.61, specially built for colonial conditions, is finding increasing favour in Canada. Fitted either with the geared or ungeared Bristol " Jupiter " engine, this machine, which carries eight passengers, cruises at about 110 m.p.h., and is thus able to maintain a fixed time table even in the face of strong headwinds. One of these machines, with interchangeable land and float undercarriages, has recently been supplied to the Ontario Provincial Air Service, and is in use, among other duties, for passenger and freight transport, fire suppression and crop dusting. The D.H.61 has been supplied to several wellknown companies in Canada, including Canadian Vickers, whose machine is a seaplane, and the London Air Transport Company of Ontario, who own a landplane.

It was in 1923 that the Royal Canadian Air Force decided to operate a civil service in Manitoba and called for tenders of Canadian-built machines suitable for the work. From several designs submitted, the Vickers " Viking, Mk. IV " amphibian was selected. Canadian Vickers, Ltd. therefore established at their Montreal plant an aircraft branch with the necessary equipment for the construction of aeroplanes and flying-boats. Later, however, it was found that a more suitable type of machine for the conditions was required, and specifications for suitable types of aircraft were drawn up. As a result, Canadian Vickers, Ltd., obtained the services of Mr. W. T. Reid and instituted a complete designing staff in June, 1924. Subsequently, Canadian Vickers, Ltd., designed several other types of aircraft, including the following :—  
The " Velos," a three-seater, twin-engined (Armstrong-Siddeley " Lynx ") pusher biplane—land or seaplane—designed for photographic work.  
The " Vista," a small single-engined (Armstrong-Siddeley

" Genet ") monoplane flying-boat for forest patrol and fire detection.

The " Verderer," a two-seater, single-engined (Armstrong-Siddeley supercharged " Lynx ") biplane, land or seaplane, for forestry patrol work over the foothills and mountains of the Western Alberta Mountains, where flying conditions are extremely severe. In addition to building eight Vickers " Vikings " and five " Avro" seaplanes ordered by the R.C.A.F., Canadian Vickers, Ltd., therefore set to work on an entirely new design, and in October, 1924, the first machine was launched. This was the Vickers " Vedette," a three-seater flying-boat fitted with a 200-h.p. Wright " Whirlwind" (or Armstrong-Siddeley "Lynx") engine, intended for forest patrol and photographic survey work. The " Vedette" proved to be a successful craft, and several more were built. It had a maximum speed of 95 m.p.h. carried a load of 665 lbs., climbed to 5,000 ft. in 9 mins., and had a ceiling of 13,000 ft.

They next got out the designs for a twin-engined flyingboat, known as the " Varuna " (fitted with similar type engines) equipped with fire-fighting apparatus and carrying a crew of seven. The performance of the " Varuna " also proved to be satisfactory. The " Vanessa," a four-passenger cabin tractor biplane, fitted with a single Armstrong-Siddeley " Lynx," or Wright " Whirlwind." It can be fitted with twin floats or wheel undercarriage.

The " Vigil," a two-seater, tractor fuselage biplane of metal construction, fitted with an Armstrong-Siddeley " Lynx," or Wright " Whirlwind," and designed for forestry patrol or training purposes.

We understand that other types are under consideration, including a twin-engined commercial flying-boat, accommodating eight passengers.

Canadian Vickers, Ltd., have also made an arrangement with the Fairchild Co., of New York, whereby each firm may build under licence the aircraft of each other's design. Fairchild cabin monoplanes have, therefore, been constructed at the Canadian Vickers plant.

## THE INDUSTRY IN GENERAL

BEFORE the war, there was only one constructor of aircraft in Canada on record, a Dr. Graham Bell, who built and successfully flew some aeroplanes at Baddeck, in Nova Scotia. After the war, operations were commenced with the stock of war aircraft; some of them gifts by the Government of Great Britain, and others purchased from the United States. The shortcomings of these war-type machines soon became apparent, in Canada as in Europe. In addition to this, special characteristics were soon found to be necessary to suit Canadian conditions. Canada was the first British Dominion to circularise the designing firms in Great Britain, laying down specifications of what was desirable for aircraft in Canada. One feature demanded was an air endurance of 10 hours, which proved impossible to satisfy in 1919-20

Still, this move was a very useful one, as it drew the attention of designers to the fact that what was suitable for northwestern Europe was not necessarily suitable for the whole of the British Empire.

The Ottawa Car Manufacturing Co., in addition to its arrangement with Messrs. Armstrong-Siddeley, has also an arrangement with the Consolidated Aircraft Co., of Buffalo, N.Y., for the assembly of their machines in Canada.

The Wright Aeronautical Corporation of Patterson, N.J., have formed a branch company in Montreal for the assembly and service of Wright engines.

Canada looks forward to the gradual building up of a local



## Notes on "Civil Aviation"

aircraft industry, which is rightly regarded as a necessity by a country which is already playing a leading part among the countries of the world in the development of civil flying. Already

three British firms have established Canadian branches and there is little doubt that, as Canada's needs increase, that number will be added to.

all of above : src ref : Flight - pg 798 SEPTEMBER 20, 1928

the Aeronautics and Communications Section - Bureau of Foreign and Domestic Commerce - AVIATION Weekly - 29 September .

1928 : <sup>Canada</sup> remains the principal market for airplanes, being the country of destination for 34 valued at \$401.- 143. with Argentina second ; the latter being the purchaser of 18 valued at \$120,950 as compared with 8 valued at \$190,111 during the whole of 1927. Canada was the destination for 26 valued at \$197,021 during 1927. In connection with Canada the following quotation from a recent report from Assistant Trade Commissioner A. H. Thiemans, attached to the office of the American Commercial Attache at Ottawa, will be of interest as an indication of why that country is so important as a market

"Flying in Canada has been used primarily as an improved method of observation, although of late more and more attention is being accorded air mail and passenger services. During 1927 commercial companies more than doubled their flying time, while civil operations for the Dominion Government increased proportionately. Aircraft was used for such varied purposes as observing for the sealing fleets off the Newfoundland coast, forest dusting in Cape Breton Island, forest fire protection and fisheries patrol in the far west, observation of ice conditions throughout the winter in Hudson Straits, transportation in the Yukon, and for air mail service.

"Recently a heavy demand for light air craft has been noted. The De Havilland 'Moth' has proved popular. and in 1927 the Ontario Provincial Air Service purchased

four seaplanes of this type for fire detection patrols in Northern Ontario. Since that time these planes have been purchased in larger quantities. The 1927 report on Civil Aviation in Canada states that more than 70 light planes are in use or on order for fire detection patrols, and light transportation in Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia, as well as for flying club and private use throughout the Dominion. The Department of National Defense has encouraged the formation of light airplane clubs and associations by furnishing such organizations with airplanes. There have been large imports from the United States of cabin monoplanes built around the Wright 'Whirlwind' engine. These planes are used for transportation purposes in the north country.

"Few individuals and firms operating aircraft in Canada carry insurance on either their planes or passengers, it was said at the office of the Canadian Air Board. Most firms are small and cannot afford the high insurance rates. Taking their own risks, some of these operators have been forced out of business by accidents.

## Notes on "Civil Aviation"

On the other hand, the larger firms carry insurance, and as aviation expands there may be a good opportunity here for American insurance companies.

"Several Canadian companies are engaged in the manufacture of aircraft. One of the most important of these is Canada Vickers, Ltd., whose output during the past year included 3 Varunas, a fire suppression flying boat; 7 Vedeties, a three-seater flying boat specially built for forest sketching, light transportation, and aerial photography; 12 Avro training machines; and 5 Viking hulls.

A great deal of repair and reconditioning work is done for commercial firms by the Canadian Vickers Company.

An arrangement also exists with an American manufacturer whereby each firm may build, under license, the aircraft of the other's design; and consequently a number of cabin monoplanes are being constructed by the Montreal company.

The De Havilland Company maintains a branch at Toronto for the construction of its planes, particularly the Moth which is in wide demand for flying clubs, patrol work, and the like. The Ottawa Car Manufacturing Co. at Ottawa has contracts for the reconditioning of standard Avro training machines and for the construction of floats and other aircraft parts in their shops. They also have a working arrangement with an American company for the assembly and service of the latter's products, and are the Canadian representatives, moreover, of Armstrong Siddeley Motors, Ltd."

September 1928 : AVIATION WEEKLY : Dominion Aircraft Operators Listed : The Province of Ontario has Now Listed 23 of 44 aviation Companies.

November 1928 : Canadian Air Board - Air Engineer licenses to date<sup>207</sup>

- A. in force : 34
- B. suspended: 1
- C. cancelled: 1
- D. applications received: 72
- E. in abeyance: 2
- F. temporary issued : 70
- G. permanent issued : 35

12 -14 December 1928 : International Conference on Civil Aviation is held in Washington, DC the Royal Aero Club is represented by Brig-General Lord Thomson, Chairman of the Club, and Captain R. J. Goodman Crouch, RAF

Ford Tri-motor seaplane is delivered to the Canadian Government for use in Central western Canada for dusting spruce trees, in the war on the spruce worm.

31 December 1928 : 199 Air Engineers were licensed in Canada - source pg 54 Aero Digest - Canadian Aviation Progress by James Montagnes March 1929 - ref <https://archive.org/stream/aerodigest1419unse#page/n461/mode/2up/search/Air+Engineers>

31 December 1928 : During the year a total of 199 persons were on record as holding Canadian Air Engineer Licenses. (Air Annual 1932-33 pg 17, Civil Aviation - Canada)

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<sup>207</sup> [https://archive.org/details/Flight\\_International\\_Magazine\\_1921-01-27-pdf?q=Air+Engineers%27](https://archive.org/details/Flight_International_Magazine_1921-01-27-pdf?q=Air+Engineers%27)

**CANADIAN AVIATION - 1929**

18 January 1929 - London, UK : Transportation Committee :  
Aviation.

35. Witness is of opinion that, having regard to the rapid strides which are being made in civil aviation, incentives should be given to Local Authorities to provide municipal aerodromes with the necessary auxiliary services, particularly when they can be included - with schemes for parks, playing fields, and golf courses, for which large areas free from buildings are required. It is part of the activities of the Automobile Association to protect and advance the legitimate interests of aviators, and the demands on the Association's Aviation Department to-day clearly indicate the necessity for the provision of landing grounds in close proximity to the large centres of population. In this connection the Witness submits that a lesson may be learned from what has happened with regard to road improvement schemes.

Many of such schemes -undertaken before the war were on far too small a scale, and consequently wasteful. A much greater preserve of open space -will be required for aeroplane and airship development than was ever the case with roads, and Witness, therefore, submits that all regional planning schemes should be the joint concern of the Ministers of Health, Transport and Air'.

- The total number of workers employed in the various branches of the English Transportation industry is certainly not less than 1,000,000. The total number of insured workers employed on the construction and repair of motor vehicles, cycles and aircraft, was stated officially in the House of Commons to be 232,560. - Sir Arthur Stanley.

THIRTEENTH DAY.

Thursday, 14th February, 1929.

Present :

The Right Hon. Sir ARTHUR GRIFFITH-BOSCAWEN, P.C., in the Chair.

The Most Hon.

The marquis OF NORTHAMPTON, D.S.O.

The Right Hon. The EARL OF CLARENDON,  
D.L.

Major The Hon. J. J. ASTOR, M.P.

Sir MATTHEW G. WALLACE, Bart.

Sir WILLIAM G. LOBJOIT, O.B.E.

Major I. SALMON, C.B.E., M.P.

Major H. E. CRAWFURD, A.F.C., M.P.

Mr. WALTER R. SMITH, J.P.

Mr. R. H. TOLERTON, D.S.O., M.C.

(Secretary).

Mr. a. SPENCE, M.B.E.

(Assistant Secretary).

Mr. Mervyn O'Gorman, C.B., D.Sc., M.Inst.C.E., re-called and further examined.

Major H. E. CRAWFURD, A.F.C., M.P. - I gather from your Memorandum that you' main contention is that the .swift, secure and economic carriage of passengers and goods from one point to another, is the most important item in the economic life of the country ?

Mr. Mervyn O'Gorman, C.B., D.Sc., M.Inst.C.E : That is absolutely our contention. It has to be taken as a whole.

I am thinking at the moment of the method of taxation. Could the method be improved in order to help the motor trade t— ^T'es, but it is not an easy matter to say precisely in what way. That would mean that the taxation which is derived from this particular industry should be so arranged that it should in some way profit that industry. That is the intention of your question?

The intention of my question also is that it is alleged that the present method of taxation is a handicap to the industry ; that it is a handicap

to engine designers. Is that your view?—^Technically, I think not. Dealing with the engine alone, I think there is proof positive that the particular method of taxation adopted has not any deleterious effect on the engine itself, the proof being that the ratio of the bore to the stroke of a cylinder used in aircraft, where there is no taxation, is the same as that which applies on motor cars where there is taxation. As aircraft manufacturers are quite free to design their engines without the constrained limits of ratio between the bore and the stroke which applies in the case of the motor car engine, it seems clear that the technicians are satisfied with what they have evolved. With taxation it does not differ from what has been evolved apart from taxation.

4262. (Chairman) : You mean that aircraft manufacturers have adopted the principle of the small cylinder with the long stroke? Is that so?—Aircraft manufacturers have adopted practically the same stroke and cylinder ratios. It is not a very small cylinder, but the relation of bore to stroke in aircraft, and abroad for that matter, is substantially the same as in England under taxation restraints.

There is no doubt that every ingenious notion is being explored in the United States to ensure that new methods of transportation come under the co-ordination of the railways. Train-aeroplane-train services already exist providing for aeroplane travel by day, and railway sleeping car travel by night. These services have halved the time taken for journeys across the American continent. In the opinion of General Atterbury the practice of treating automobiles, ships, aircraft and railways as separate transportation agencies is wasteful and un-economical. They are not essentially competitors, for each functions best in its own field. Each supplements and is supplemented by, the rest, and in this fact is the key to the railway problem.

98. There is a general reception in the United States of the fundamental difference between the British and American railway problem. The geographical limitations of Great Britain make the railways extremely vulnerable to motor vehicle competition, while in the United States not only does a vast automobile industry supply the railways with over 9 per cent, of their total carload freight, but the huge extent of the country provides an assurance that railways will always remain the backbone of the nation's transportation services.

1929 : Canadian Flying Club crashes to date : 15 aircraft crashed, 5 aircraft written off.

23rd Feb 1929 : 23rd—Capt. George Haldeman, in a standard Bellanca CH monoplane, made the first non-stop flight from Canada to Cuba. He took off from Walkersville, Canada, and arrived at Havana 12 hours and 56 minutes later, having traveled a distance of 1,404 miles. - Aero Digest Dec 1929 issue

## Notes on "Civil Aviation"

29 February 1929 : Canadian DND is ordered to construct a chain of airports from coast to coast linked by revolving light beacons. These beacons are later linked by 35 Radio range stations. This is the start of the 3314 mile national "Trans-Canada" air-way from Toronto to Vancouver. Complete in 1939-1940 it connects 8 public airports, 11 municipal airports and 79 airfields. The Canadian Post Office (reluctantly) participates in the construction and insists that "*the mail be flown at night on the Post Office's schedule, no matter the weather*".

March 1929 : Canada Gazette : Curtiss Reid Flying Schools Ltd. letters patent issued under the Companies ACT.

21 March 1929 : FLIGHT : Air Minister on All-Metal Aircraft : SIR SAMUEL HOARE, speaking of aircraft at the "coming of-age" dinner of the Institute of Metals on March 13, said that all new metal machines which had been substituted for the older wooden ones, in the case of land machines were 15 percent, lighter, and in the case of flying-boats 25 per cent, lighter. One of his last flights was undertaken in a metal flying-boat, and he was told that the machine was almost a ton lighter than its wooden counterpart. Only three years ago the Air Ministry ordered in one year 392 wooden machines, against 21 metal ones. In 1928, on the other hand, they ordered 423 metal, against 63 wooden machines. By the end of this year they would have substituted metal for wooden machines almost entirely.

and

At the anniversary festival function of the Royal Caledonian Schools GENERAL SIR IAN HAMILTON reiterated that "our Imperial forces were being cut down to the bone, England having gone further in this direction than any other of the Allied Powers. "Taking things as they are," he said, "It may fairly be claimed that cutting down the estimates of the old Services and starving the new Air Force has not so far in any way damaged the true basis of our Imperial strength, the spirit of the officers and lower deck ratings of the Navy, or of the officers and rank and file in the Army. **Air binds an Empire even more closely than the sea, but we have only six squadrons associated with the Territorials ; we should have sixty."**

21 March 1929 : FLIGHT : IN PARLIAMENT : SIR. S. HOARE, in reply to Mr. Wellock, said the number of civil aircraft registered in Great Britain and Northern Ireland is 453, of which 361 have been granted certificates of airworthiness and may be regarded as in use or available for use ; the remaining 92 are aircraft in various states of construction or under examination for certificates of airworthiness.

21 March 1929 : FLIGHT - IN PARLIAMENT : re RAF Apprentices and Discharge Purchase : SIR S. HOARE, in reply to Mr. Broad, said "RAF apprentices, in common with other recruits, have the right to claim their discharge within three months of their enlistment on payment of £20. If they do not claim discharge within that period, they can only obtain it on very strong compassionate grounds, and the same rule applies to ex-apprentices who have not completed two years' service after leaving the training school. Ex-apprentices who have completed their two years since leaving school may be permitted, if it is possible without detriment to the service, to purchase their discharge by paying [pounds]100, reducible in certain cases at the discretion of the Air Council. These rules are necessary owing *to the heavy expense of training apprentices.*

1929 : England : Air Minister Samuel Hoare is "at the Air Ministry for 2 purposes":

1. to preach Trenchard's principles of air power, and, s
2. to establish civil air transport as a dependable means of quick communication in the Commonwealth and Empire



## Notes on “Civil Aviation”

1929 : Schneider Trophy race : a direct confrontation between the RAF's 1900 hp Rolls-Royce "R" engined Supermarine S.6A and the Italian Air Force's Macchi seaplane. (the only other major independent air force in the world) flying Macchi seaplanes anunder direct orders from Mussolini to provide a victory for his regime. The new Supermarine, the S.6A, now had the Rolls-Royce "R" engine developing 1900 hp. The race was won by RAF Flying Officer Waghorn at a speed of 328.63 mph.

19 May 1929 : Farman F.63bis Goliath F-GEAI operated by Air Union en-route Croydon to Paris crashes at Keylands Sidings near Paddock Wood railway station and is destroyed by fire; the pilot and mechanic escape with minor injuries.

17 June 1929 : Handley Page W.10 G-EBMT “City of Ottawa” operated by Imperial Airways crashes into the English Channel near Dungeness killing 7 of the 13 onboard

28 June 1929 : the British Aviation Insurance Group (BAIG) is given approval to deal with the general classification of aircraft, the inspection of light aircraft and recommendations for the renewal of certificates of airworthiness<sup>208</sup>.

The BAIG were given official standing by the AM and work previously handled by the government through its own officials is to be turned over, in some cases, to the insurance companies. In future, certain privately owned aeroplanes will be examined for airworthiness when their owners apply for a renewal of registration by inspectors in the employ of the BAIG. The fee paid by the owner of the aircraft will be received directly by the underwriters and it is hoped that the new plan shortly will result in economies permitting the reduction from the present charge of 5 guineas (US \$25.00) for each renewal of an airworthiness certificate. The offices from which this will be handled will be located in the building occupied by the Lloyds register of Shipping and co-operation between the aircraft and marine underwriters is "Probable". This approval was not extended to public transport aircraft. The British Corporation was given similar approval. The approval was not implemented by BAIG as Lloyds agreed to set up its own organisation. BAIG withdrew, and Lloyds was given approval in September 1929.

29 June 1929 - aviation weekly pg 2266 western canada airways of Winnipeg (est 1926 with 1x Fokker Super Universal at Hudson Ontario) By 20 Nov 1928 WCA operate 9x 4 seat, FSU's, 8x 6seat FSU's 1x Fairchild 4 seat monoplanes, 1 Fokker tri-motor 10 seater, 2x Boeing flying boats, 1x Vickers Vedette, 1x DH60 Moth, 4 Avro Avians (Cirrus engines), one of which is rented for \$30/hr for flight instruction - three of the FSU's are G-CASE, G-CASE, G-CAGD, G-CAIX . Post Nov 20, 1928 they add 2x more Boeing flying boats and 1x Junkers. The FSU's are powered by both Wright "Whirlwind" and the Pratt "Wasp" engines.

Also notable in 1929 are the “Elliot Brothers” of Sioux Lookout who supply skis for aircraft and who built the Skis for the Byrd expedition and supply skis to WCA.

The only hangars in the north are for the engines - to keep the rain out in the summer and to keep warm in the winter while performing maintenance.

THE F&B MINERAL AREA												
WESTERN CANADA ASPHALT, LTD.												
SIZES												
\$ PUMP PER GAL (10)	1 1/2" P&L	2" Creamy m&g Sourough	3" Smith P&L Sourough	4" Cold Lake	5" Cold Lake	6" Cold Lake	7" Cold Lake	8" Cold Lake	9" Cold Lake	10" Cold Lake	11" Cold Lake	MILES
The Bus	10	15	20	25	30	35	40	45	50	55	60	10
Greenbury P.	30	13	20	24	28	31	34	37	40	43	46	10
Sourough	45	15	30	11								25
Spence gas 24	\$											
North Lake P&L	10											10
North Lake	10											27
Smith P&L	10	10	27									26
Cold Lake	30	30										35
Woodsy	14	30	35									34
P&L Plan	14	34										34
Sourough	14	35	31	33								33
Elbow Lake	31											30
Greenbury B.	12	35	15	10	16	14	10	14				15

31 July 1929 : Farman Goliath F-GEAB operated by the Compagnie des Grands Express Aériens en-route London to Paris carrying gold bullion is damaged in a forced landing near Smarden in Kent.

## Notes on "Civil Aviation"

Sept 1929 : USA - Government : NEW CHIEF APPOINTED  
IN COMMERCE SECTION

1/-ENNETH M. LANE, designer of the 1V Wright Apache airplane which last May broke the world's altitude record, has been appointed chief of the Commerce Department's Aeronautical Engineering Section, it was announced recently by Clarence M. Young, Director of Aeronautics. A graduate of Massachusetts Institute of Technology, Mr. Lane has had four years' aviation experience with the Government at McCook Field, two years with the Dayton- Wright Company at Dayton, Ohio, and six years with the Wright Aeronautical Corporation of Paterson, New Jersey. As chief calculator, chief designer, and chief airplane engineer for the Wright company, he designed the Wright Apache airplane with which Lieut C. C. Champion and Lieut. Apollo Soucek established new world altitude records.

The primary function of the engineering section of which Mr. Lane will have charge is to determine that aircraft, for which licenses are issued, are airworthy when they leave the factory at which they are built. This section examines in detail the specifications, stress analyses, structural designs, and drawings which are submitted by the manufacturer to the Department of Commerce. It inspects materials of construction, workmanship and fabrication methods used at the factories. It examines production aircraft to determine whether they are built in exact accordance with the submitted specifications and drawings, and it determines the maneuverability and general flying qualities of all aircraft on which approved type certificates are requested.

12 September 1929 : RAF Squadron Leader Orlebar raises the world absolute speed record to 357.7 mph in the Supermarine S. 6A.

1929 : C.H. Green - air engineer , F. Burton mechanic.

1929 : RCAF Camp Borden Avro 504's replaced by abt 20 De Havilland Gypsy Moths. (Note : Avro had oleo gear, Moth had rubber shock discs)

22 June 1929 : Shenston transitions from Avro 504 and subsequently crashes a D.H-60 Moth at Borden (due to the moth wanting to fly on the flare wheareas the Avro would drop her tail at the same speed - DH was a better aircraft with a more efficient airfoil). Shenstone noted that the fwd cabane wires were attached to the plywood skin and not to the fuselage frame.

17-19 July 1929 : Canada govt physics dept. Balloon Sonde. Exploration of the Upper Air with balloons carrying instruments, six ascents each from Goderich, Ontario, and from Calgary, Alta., ten instruments were recovered

1929 : National Research Council - Ottawa, Canada, assistant Dir. J.H Parkin convenes a committee on Aeronautical Research with the DND and the Canadian aviation industry : construction begins on the NRC aircraft engine laboratory and wind tunnel.

June 1929 : Beverley Shenstone graduates from the University of Toronto with the first Master's in the "applied Science of Aeronautical Engineering" and becomes Canada's first "Aeronautical Engineer". SEE / READ the U of T Extension Course outline for 1928-29.



Claudius Dornier lecture to RAeS on Flying Boats read by Shenstone, Stedman uses RAF contacts at Air Ministry to get Shenstone a placement under Dr. Hugo Junkers at Junkers factory, Dessau, Germany. Junkers was then the leading authority on "Nurflugel" or "flying wings". Junkers' was attempting to build the 107 ' wingspan 40 passenger (seats in the leading edge) G-38 "Nurflugel" bomber. Junkers' was forced to hand over his company and all designs and research in 1933/34 and was banished from his life's work. by 1936 Dr. Junkers was dead.

August? 1929 : "Pilot Officer" (provisional) Beverley Shenstone, resigns his RCAF commission when told he cannot travel abroad and train as an RCAF pilot at the same time.



## Notes on "Civil Aviation"

09 August 1929 : the Graf Zeppelin departs Lakehurst, NJ for a four-leg complete circumnavigation of the globe, terminating in



Lakehurst, NJ 21 days, 5 hours and 31 minutes later having covered 33,234 km (20,651 mi; 17,945 nmi) - the fastest circumnavigation of the globe to date.

26 September 1929 : Beverley Shenstone leaves Toronto for Montreal, boards Norwegian ship "Storburg" for Europe. Arrives Hamburg Germany 17 October 1929.

September 1929 : GREAT WEST AIRWAYS, LTD., is to be taken over by the Boeing Airplane Company of Canada, according to negotiations reported between the two concerns. Great West Airways is a bidder for the Calgary-Vancouver air mail contract. WESTERN Canada Airways, Ltd., has established a seaplane base at Prince George and daily flights are being made to the Ingenika mining country with a Fokker Super Universal

CHINESE citizens of Toronto are presenting their native country with six airplanes, which will be shipped from Toronto to the Orient. Four of the ships are destined for Nanking as training ships for commercial pilots, and the other two will go to Canton. The planes were paid for by voluntary subscriptions collected during the past year.

THIRTY-FIVE Canadian Aircraft representatives have formed the Canadian Aeronautical Chamber of Commerce to advance the aeronautical interests of the Dominion. When governmental approval is received, the organization will be incorporated. The purposes of the Canadian Aeronautical Chamber, as set forth in tentative by-laws drawn up, include the promotion of trade with Canadian aviation interests, the distribution of information concerning the industry, the advocacy of laws favorable to aeronautics, the adjustment of difficulties within the industry, and the acquisition of property.

THE Canadian Government is spending  
-1 about \$140,000 this year for the promotion  
of flying clubs. Most of this money  
will be spent on airplanes to be presented  
to the clubs. Flying club membership in the  
Dominion is now over 3,400 with 260 members  
flying solo. There are 142 private  
licenses among the club members and 45  
commercial tickets.

TPHE Winnipeg Flying Club, at its first  
-1 annual meeting reelected J. A. Sully as



## Notes on "Civil Aviation"

president. The club has experienced a very successful year and has had 1,760 hours of flying with no serious accidents. Because of this record it is the only club in Western Canada that can get crash insurance. There are plans for a new clubhouse and tennis court and a drive for a membership of 475, twice that of the present. It is expected that parachutes will be purchased for those members who wish to practice aerobatics.

TN preparation for the air mail service  
\* across Western Canada the Department of National Defense has sent out 'Major W. A. Steel of the Royal Canadian Signal Corps to establish radio beacons between Winnipeg and Banff, Alta. The present plans calls for night flying, leaving Winnipeg about 10 p. m. with mail, and arriving at Banff about 6 a. m., in time to catch the west-bound trains that carry the mail through the mountains to Vancouver. It is planned to establish radio stations at Cordova, Man., and 'Regina, Sask., this fall, and at Maple Creek, Sask., and Calgary, Alta., in the spring. At the time, plans are being made for emergency landing fields, and the establishment of visual beacons on the regular airports.

Canada imports 44 aircraft from the United States during the 1st 6 months of 1929. transcontinental air lines plans to establish passenger service between Qeveland and various points in Canada.

The Barling NB3 the only all-metal structured 3-place airplane available in the United States, Department of Commerce Type Certificate No. 174, manufactured by the Nicholas-Beazley Airplane Company, Inc., of Marshall, Mo. The plane, which is the only three-place ship to be licensed with a sixty horsepower engine, is one of the first to be approved under the new Department of Commerce requirements which went into effect July 1st. powered with a Le-Blond 60 horsepower engine, was used by Pilot Zimmerley recently on his flight from Brownsville, Texas, to Winnipeg, Canada, when he set a new non-stop long distance record for light planes. 16 hours—103 miles an hour. CANADIAN American Airways, Inc., recently began operations on its new line between the Twin Cities and Winnipeg, Canada. Braniff-Universal on July 25 also established direct airline connections between Oklahoma City and Winnipeg, Canada, through a connection with the Canadian- American Airways, 'tic, at St. Paul, Minn.

## Notes on "Civil Aviation"

Commodore F. G. Ericson - associated with the development of aviation since 1909 ; during the World War he represented the United States Air Board as well as the Imperial Munitions Board of Great Britain, in England and France. In the capacity of Chief Engineer, R. A. F., he directed the construction of the well known "Canuck Training Plane," thousands of which were used by the Royal Air Force and the U. S. Army Air Service. He was Chief Engineer of the Curtiss Airplanes & Motors Ltd., Toronto, and also assisted in the development of the F5L Flying Boat and directed the construction of a great number of these planes for the U. S. Navy. In 1918 Commodore Ericson was awarded a life fellowship in the Aeronautical Society of Great Britain. He is the possessor of the first F.I.A. Pilot's License, issued in Canada.

VJAJOR-GENERAL J. H. MACBRIEN, president of the Aviation League of Canada, is making a trip across Canada in his Gypsy Moth. After inspecting the various flying clubs in the east he flew on to Winnipeg, and thence to Regina, to attend the convention of western flying clubs. The plane is the standard Moth used by all flying clubs with the exception of an extra fuel tank which gives it a cruising range of about six hours. Proceeding on from Regina the general will visit at Calgary, and then fly across the mountains to the Pacific coast.

AIR mail service for Western Canada has been definitely assured and the entire contract for service between Winnipeg, Regina, Saskatoon, Edmonton and Calgary was allotted to the Western Canada Airways of Winnipeg. It is intended that this be all-night flying, but since the beacon, emergency landing fields, direction lights, etc., that are being prepared by the Department of National Defense, will not be ready until late in the fall, the Post Office Department has announced that there will be a daylight service, similar to that of last December, for a month before the night equipment is ready.



millions of dollars worth of timber. Aero-Digest pg 182 Sept 1929

WITH five new light aeroplane clubs throughout the country already operating this year, five others' are struggling to complete their organization and to claim the government grant of two machines each, but only three will get their equipment on this year's vote, it is stated by the Department of National Defence. At the present time, it is said, the three clubs most likely to receive their machines during the summer are those at Brandon, Man.; Brantford, Ont.; and Stratford, Ont.

ANOTHER very important victory was made by the airplane when it was announced that the aerial dusting of the forests against the spruce bud worm plague was found to be very successful. The government sent its big tri-motor plane into the Western Ontario district and the Dominion entomologist, Dr. J. M. Swaine, reported the dusting to be very effective and may save

October 1929 ANTHONY H. G. FOKKER'S newest single motor design, the Fokker F-14 Mail Plane, made its first public appearance at Cleveland Airport during the National Air Races. Orders for six of the new F-14s have been received from the Western Air Express and ten from Western Canada Airways, Ltd. It is a pay load ship,

with a high speed of 140 miles per hour, and of parasol construction for maximum visibility. Preliminary tests of this monoplane showed that it will lift a pay load of 1,600 pounds in 9 seconds.

The parasol wing construction is a departure from recent Fokker designs. The full cantilever type wing, entirely covered with wood veneer, is raised from the fuselage to give unobstructed vision to the pilot, whose cockpit is aft of the cabin.

The new F-14 is powered with either a Pratt and Whitney Hornet or a Wright Cyclone, both of which are 525 horsepower engines. It has an adjustable- pitch propeller, electric inertia starter and booster magneto. The ship has a high speed of 140 miles per hour, a cruising speed of 115 miles per hour, and a landing speed of 55 miles per hour. It climbs to 1,200 feet the first minute and has a service ceiling of 18,000 feet.

Its two gasoline tanks located between the wing spars have a total capacity of 180 gallons. Two King Seeley gasoline guages are located on the instrument board. It has an 18-gallon oil tank. The cruising range is 800 miles.

Its cockpit is of the open type, located behind the mail compartment, and contains a single pilot's seat with safety belt. The instrument board is illuminated and has a magnetic compass, altimeter, air speed indicator, tachometer, clock, bank and turn indicator, oil pressure gauge, rate of climb indicator, oil thermometer and magneto switch.

Like all Fokker planes, the fuselage, tail surfaces and landing gear are of tubular steel construction. The landing gear is of the divided type, with axles and axle bases hinged to the bottom longerons. It has oleo-pneumatic shock absorbers and wheels fitted with 36 by 8 inch tires and internally expanding brakes. The wheel has a 14 by 3 inch tire. Brake controls act independently on each wheel for aid in steering when taxiing, but both brakes may be set for parking or engine testing.

The nose cowls have adjustable shutters for departure control operated from the cockpit.

The sides and floor of the cabin are finished with corrugated aluminum. The cabin has non-shatterable side glass window\*- Although designed for mail transportation with no seats installed, the cabin may be fitted with six seats.

## Notes on "Civil Aviation"

### Specifications

Span 59 feet

Length overall 43 feet 4 inches

Height overall 12 feet 11 inches

Wing area 550 square feet

Gasoline capacity 180 gallons

Oil capacity 18 gallons

### Performances

High speed 140 miles per hour

Cruising speed 115 miles per hour

Landing speed 55 miles per hour

Climb 1,200 first minute

Service ceiling 18,000 feet

Cruising radius 800 miles



Aero-Digest pg 156 Oct 1929

October 1929 : US Government : AERONAUTICAL CHAMBER OF COMMERCE SECTION MEETINGS

DISCUSSIONS promoting the interests of the aeronautical industry as a whole, and proposals for the elimination of present evils in aviation were advanced in the meetings of the various groups of the Aeronautical Chamber of Commerce of America during the National Air Races and Exposition held in Cleveland, August 24 to September 2. Topics discussed at the meetings of the organization included the present airworthiness requirements of the Department of Commerce for the licensing of aircraft, the development of interest in air travel, the specifications and identification of aircraft fuels, sales organizations, servicing problems, and the problem of questionable and inadequately equipped flying schools.

Airworthiness Requirements Discussed : Commercial airplane manufacturers, meeting in one of the aeronautical industrial conferences arranged by the Aeronautical Chamber of Commerce of America, expressed general satisfaction with the present Airworthiness Requirements set up by the government to protect the American public.

The Airworthiness-Requirements, which is the engineering code followed by commercial airplane manufacturers to obtain government approval of their planes, was discussed and only minor modifications recommended.

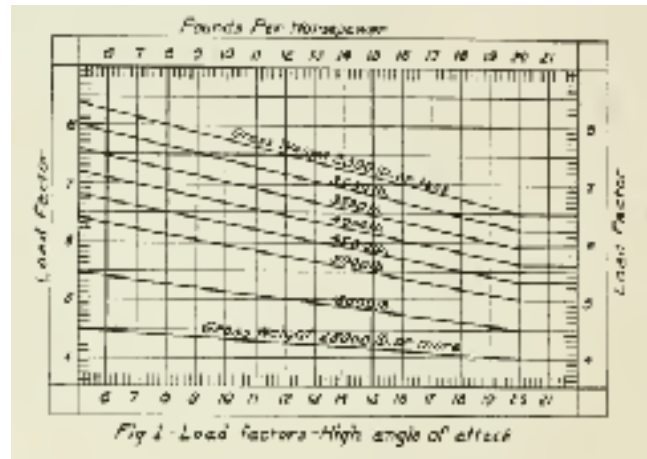
Possible changes in the present spinning tests, and maximum engine speed requirements were considered and a committee of three manufacturers appointed to present these as well as other technical aeronautical problems to officials of the Department of Commerce. A code of procedure, governing the relations of aircraft manufacturers in the Aeronautical Chamber of Commerce with the Department of Commerce in the development of the Airworthiness Requirements, was approved by the manufacturers' section.

## Notes on "Civil Aviation"

The current US code provides for the publication of Airworthiness Requirements once each year, on January 1, and for a joint meeting of manufacturers with officials of the Department of Commerce to consider proposed changes in the requirements each September.

William P. MacCracken, Jr., praised the spirit of close cooperation that exists between manufacturers of aircraft and the government in regulation and licensing of planes for the protection of the American public. The manufacturers and government

officials agreed that changes in the requirements should be made according to a definite code of procedure, which should not work a hardship on the constructor or unnecessarily burden the Department of Commerce. It was proposed that changes in the Airworthiness Requirements be issued in loose leaf form and that additions to the requirements be issued at any time during the year. Changes or additions would be made optional for a period of several months from the date of issue. Optional changes or additions would apply only on new designs received by the Department of Commerce later than four months after the date of issue of a change. The joint meeting also considered methods of obtaining cooperative action on drafting changes or additions to the Airworthiness Requirements.



1929 : Aero Digest : The efficient regulations provided in the Air Commerce Act of 1926 stabilized the young industry both commercially and technically.... There are some excellent planes built in France, and some poor ones, as is true of every country, including the United States.

But in the United States, Department of Commerce regulations do not permit such ships to be used for commercial purposes. I have a great deal of respect for the intensive system of factory stress analytical and flight testing, and for the system of inspection employed by the Aeronautics Branch of the Department of Commerce.

I had the pleasure of having a long discussion with Major Clarence Young shortly after he had landed at Le Bourget with his Stearman biplane. I wondered at the time what he thought of the European inspection and licensing systems, and, of course, he was too polite to volunteer comment.

Who can say whether European technical development is of a higher order than American? Suffice it to say, however, efficient and airworthy planes are more general in America than in Europe, although a certain few European products stand out as being superior to certain American planes of the same class." October 1929 Aero Digest PP 259-260

04 - 12 October 1929 : 2nd International Conference on Private Air Law, Warsaw Poland.

### 1929 REGULATIONS FOR AIRCRAFT ENTERING CANADA

REGULATIONS governing the entry of American airplanes into Canada were recently made public by the Department of Commerce. According to the report the following regulations must be observed by pilots flying into the dominion

:

**The aircraft must be registered and passed as airworthy by the United States Department of Commerce, Aeronautics Branch,** and it must bear the registration markings allotted it by that branch, preceded by the letter "N."

The certificate of registration and airworthiness must be carried on board.

The pilot must be duly licensed by the United States Department of Commerce.

If the aircraft and pilot are licensed to carry passengers, they may do so internationally, but not between points in Canada, except in the case of through passengers making a landing en route.

American pilots may not engage in commercial aviation in Canada, nor may aircraft be employed on such work unless registered in Canada.

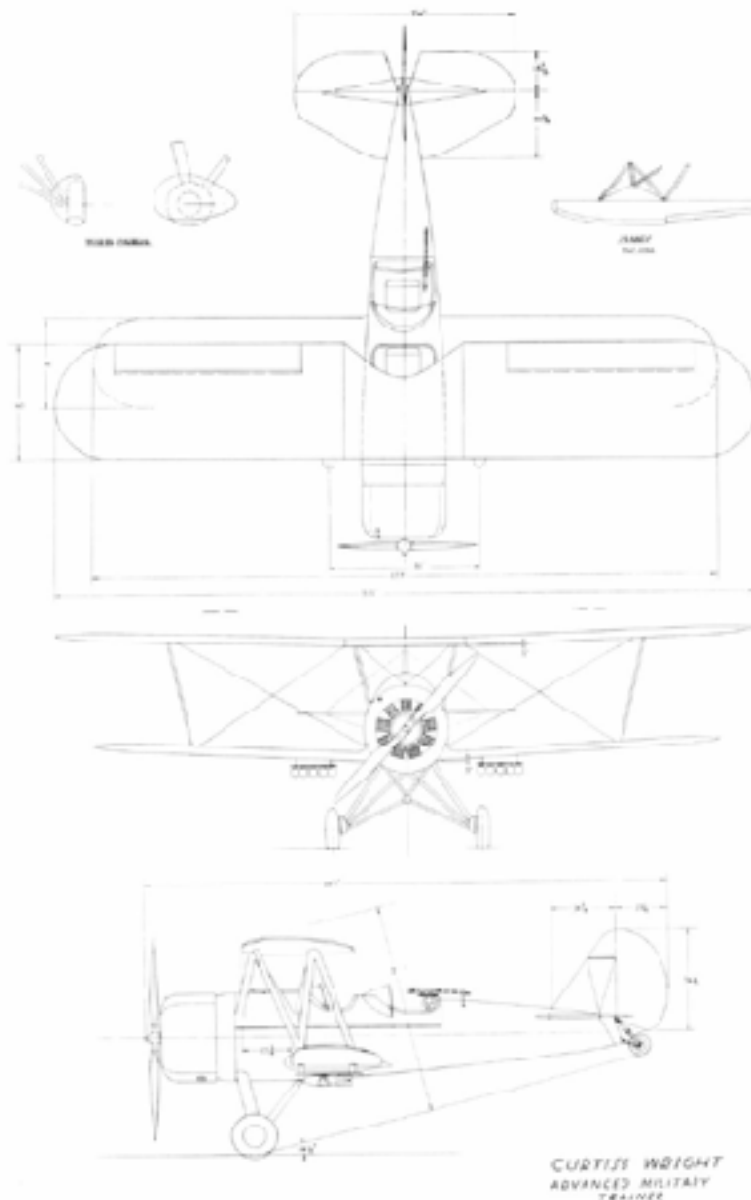
The pilot of the aircraft is required to notify the Collector of National Revenue at, or nearest to, the landing field at the point of destination, and such notification shall be given prior to taking off, in order that sufficient time may be afforded the collector to arrange for customs facilities.

## Notes on "Civil Aviation"

Should passengers be carried, the owner or pilot of the aircraft shall also make arrangements with the Department of Immigration for proper entry. Aero-Digest pg 192 Oct 1929

ENGLAND : A PROJECT to link the British West Indies, British Guiana, Venezuela and Canada by a seaplane fleet, competing with American airlines in South American traffic, has been announced by H. W. Garraway and George G. Black, London agents of the Atlantic Airways, Ltd. The plans call for three lines of seaplane service: From Trinidad to British Guiana and Trinidad to the Venezuelan oil fields ; Trinidad to the Barbadoes and Trinidad to Jamaica by way of the Leeward Islands ; and an extension of the service from Jamaica to Montreal by way of the Bahamas and Bermuda. Negotiations are progressing with the British government, the Colonial government and the Venezuelan government with the object of opening the first section of the service early in 1930, necessitating a subsidy of \$150,000. Aero-Digest pg 248 Oct 1929

FOREIGN NEWS IN BRIEF : Compiled from reports from AERO DIGESTS correspondents, the Aeronautics Trade Division. United States Bureau of Foreign and Domestic Commerce.



## Notes on "Civil Aviation"

HPHE first daily express service from A Canada, operating between Toronto, Hamilton, London and Windsor was inaugurated recently by the Canadian Pacific Express Company. A Fairchild cabin monoplane, piloted by Captain R. H. Bibby, took off from Canadian Airways field at Weston. The schedule of the new line is as follows: leave Toronto 1:45, arrive Hamilton 2:15; leave Hamilton 2:30, arrive London 3:15; leave London 3:30, arrive Windsor 4:30. On the return journey the plane will leave Windsor the next morning at 6:35, arrive London 7:40; leave London 7:50; arrive Hamilton 8:30; leave Hamilton 8:40; arrive Toronto 9:00.

RONNIE JOHANESSON, formerly of the Royal Air Force, has taken over the joint duties of instructor and business manager of the Winnipeg Flying Club.

Mr. Johanesson, a war time pilot, has over 600 hours of flying time. He received his training at the British Flying School in Egypt, and served two years as an instructor. HPHE Western Canada air mail service is practically complete, awaiting only the lighting to be placed on the intermediate fields. This work is now being done between Winnipeg and Regina. The contractors, Western Canada Airways, are now taking delivery of eight new special Fokker mail planes. The main route will connect Winnipeg, Regina, Moose Jaw, Calgary and Canmore.

HPHE Postmaster General has just announced a new air mail service between Ft. Murray, Alta., in the Peace River country, and Aklavik, North West Territories, near the mouth of the MacKenzie River on the Arctic Ocean. The service will begin in November. W. L. Brintnell of the Western Canada Airways, who took government officials over the route, made a nonstop flight of 860 miles from Aklavik to Dawson City, Alaska, in 6 hours 45 minutes in a Fokker Super Universal.

HPHE Niagara Falls division of Sky View Lines, Limited, has been making daily sightseeing trips over Niagara Falls during the summer, averaging about 100 passengers



Personnel of the Niagara Falls Division of Sky View Lines, Ltd.



## Notes on "Civil Aviation"

per day. Pilots of the division include Bob Thiebert, chief mechanic; Art Allman, pilot; Oscar McLeod, president ; Jerry Blackburn, purser ; and Harry Hublitz, chief pilot. Hp'HE Great Western Airways, Limited, of Canada, is an operating company formed recently by the merger of three airline operating companies for the purpose of competing for air mail contracts to the Prairie Provinces. Commercial Airways, Ltd., of Regina, Great Western Airways, Ltd., of Calgary, and Commercial Airways. Ltd., of Edmonton, participated in the merger. J. H. Tudhope, supervisor of airports and airways for the Dominion Government, will be general manager of the firm. Aero-Digest Oct 1929

13 October 1929 : The "Warsaw" Convention for the Unification of Certain Rules Relating to International Carriage by Air is signed at signed at Warsaw, Poland. It is written in only one "Official" language, French.

24 October 1929 : Beverley Shenstone meets British Air Attache, Gp. Captain M.C Christie @ British Embassy, Berlin. Advised by Christie that Junkers were good people, and "not to stay at Junkers for too short a time"and to say he was from "America" instead of Canada.

November 1929 : Beverley Shenstone arrives at Junkers, meets Bohm, Auger, Kohler, Wagner.

air tourists from the United States taking part in the Ford Motor Co. Ford Reliability Tour found such clubs in existence at Windsor,

Toronto, Ottawa and Montreal, all four of their stops north of the border. Right at the first stop, there at Windsor, the tourists came in touch with the Border Cities Flying Clubs, which were their hosts at luncheon. If it was worth something to the Canadians to see the forts -one planes from the States, it might well be profitable to the States to know more about the Canadian Light Plane Clubs. Their loyal officers and members were eager to explain the clubs to the tourists and tell all about them.

By this interesting plan, we were told, the Canadian government subsidizes civilian flying, for the double purpose of promoting commercial aviation and building up a reserve of fliers with an eye to the important part it might play in the national defense. Upon the organization of a private flying club, if it provides landing field and equipment, a competent instructor and air engineer, the government gives the club two planes. If the club buys a third plane, the government gives it a fourth. It further gives the club a cash bonus for the first thirty students trained

The movement really extends from coast to coast. In each club there are from a score to a hundred civilian fliers, including many of the best young men of Canada. A fine spirit evidently permeates the organizations, and they are having a great influence on the movement to get into the air, throughout the Dominion. Those fields on which they landed the tourists found called "air harbours" up there. Last year Canada had forty-four of them, duly licensed, and they are opening many this year. Fifty-three operating companies reported nearly 3,000,000 passenger miles flown last year. Airplanes transferred many men and much material to the



## Notes on "Civil Aviation"



AIRCRAFT SALES, SERVICE and REPAIR  
AIRMAIL TRANSPORTATION  
AIR MAIL PHOTOGRAPHIC SURVEYS  
AIR MAIL CARRIER SERVICE  
FLYING ACADEMIES

22 WEST 57th Street, New York City  
NEW YORK 19  
AIRMAIL TRANSPORTATION  
AIR MAIL PHOTOGRAPHIC SURVEYS  
AIR MAIL CARRIER SERVICE  
FLYING ACADEMIES

northern mining camps, which largely accounts for the item of 2,404,682 pounds of "freight" reported as carried in 1928. Those on the tour who were interested in supplying Canada's needs for planes and parts and placements found this opportunity of personal contact with the Canadian fliers one of the valuable features of the cruise. Aero-Digest November 1929.

06 November 1929 : Junkers G 31 reg. D-903 "Oberschlesien" on a scheduled flight operated by Luft Hansa en-route Croydon to Amsterdam crashes at Godstone, Surrey killing the pilot, crewman Prince Eugen of Schaumburg-Lippe and 4 of the 5 passengers.

12 November 1929 : Beverley Shenstone begins work at Junkers' (0700-16:30). Employed in the sheet metal department. In the first few weeks of his "Practicum" on the floor, Shenstone learns:

- a) Panel Beating,
- b) Riveting of Duralumin
- c) metal cutting,
- d) metal forming,

e) drawing to real life development of fittings etc.

Also present are other foreign students : Japanese, Egyptians, Finns. Shenstone moves to building cowlings for J-48. The engines were "License Built" copies of the Gnome-Rhone, but the spark plugs were in different locations than the drawings). Shenstone stayed at Junkers' long enough to see the introduction of the wing root fillet (first used on the Junkers' Junior) and the first flights of the Ju52. Introduced to "Bahaus Design movement and Ideas"

late 1920's: Zinc Chromate was first used as an anti-corrosive barrier primer; it could be described as a sort of painted-on galvanizing. It had been developed by Ford Motor Company by the late 1920s, subsequently adopted in commercial aviation and later by the US Military. Official USAAC notes mention successful application of Zinc Chromate primer starting from 1933, but it had not been adopted as standard until 1936

12-17 November 1929 : Canada govt physics dept. Balloon Sonde. Exploration of the Upper Air with balloons carrying instruments, six ascents each from Goderich, Ontario, and from Calgary, Alta., instruments were recovered (seven). The greatest height reached in the Goderich ascents was 8-1 miles on the 17th November, when a temperature of 68 F. below zero was recorded. The highest ascent at Calgary' occurred on the 16th November, and a temperature of 60 F. below zero was registered.

1929: Canadian Pacific Railroad (CPR) and the Canadian National Railroad (CNR) create the Aviation Corporation of Canada to represent their flying interests.

1929: Colonial Western Airways Inc., Toronto, Ont., operates Sikorsky S-38 flying boat.

1929 : 960 acres of farmland near Trenton were purchased by the federal government to establish a Royal Canadian Air Force station to be called RCAF Station Trenton

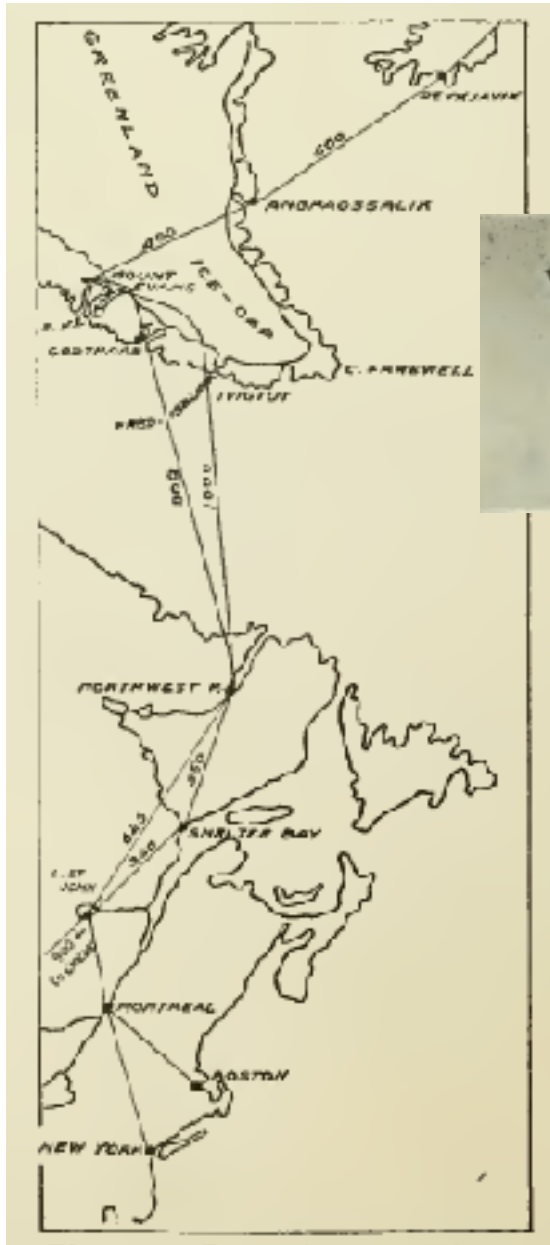
1929 : Air Ministry "Airworthiness Handbook for Civil Aircraft - AP1208" first published. Incorporates the "In-Force" Air Navigation Order. (When compared to the current UK-ANO, it is apparent that there has been little change)

November 1929 - Aero Digest : the more prosperous bootleggers have used airplanes to smuggle liquor into the country from Canada has at least been suspected. The Prohibition unit in turn has used planes to take aerial photographs of roads along the Canadian border so that the much harrassed rum runner will have a more difficult time.



## Notes on "Civil Aviation"

The case for an aerial police force has been strengthened by recent incidents in which the airplane helped to render justice swift and sure. British Columbia pointed out how Indians of that locality who a few years back were using dog sleds are NOW flying airplanes to get from their villages to the trapping grounds. Several of the red men have their OWN planes, and air taxis are employed by others.



November 1929 : R101 Test flight at Cardington;

November 1929 : Aero Digest : **AIRPORT** facilities for both landplanes and seaplanes are practically completed at Saint John, N. B. A municipal landing field is located within the city limits and a seaplane station is three miles away at Millidgeville on the Kennebecasis River. Approximately \$100,000 has been expended on the development of the Saint John Airport. It is surrounded by broad open land air mail, commercial, private and student pilots are using the field. Sheltered water area is provided at the seaplane station. Equipment includes a landing stage, a slipway for drawing machines out of the water and arrangements for fueling planes. A good motor road enables travel to the center of Saint John within a few minutes.

The Summer's Aviation Activities in British Columbia  
[A. P. Roberts]

AFTER an unusually active summer season, British Columbia aviation is settling down to somewhat more restricted operations during the winter months. During the summer more planes flew in the province than ever before, chiefly on work connected with the development of natural resources.

Three machines—two Royal Canadian Air Force Fairchild cabin monoplanes and one Western Canada Airways Junkers—operated

on photographic surveys for the British Columbia government in the Peace River area. During the summer they photographed 12,000 square miles of territory, making their base at Prince George. All three were on floats. Four other machines were operated by Western Canada Airways in the

province—three Boeing flying boats on fishery patrol and contract work on the coast, and one Fokker Universal on freight carrying to the mining areas of central British Columbia out of Prince George. Dominion Airways, Ltd., of Vancouver had three planes in service, one DeHavilland Moth seaplane operating on forestry patrol out of Nelson and two others in constant use at the company's school in Vancouver. In addition to these the Aero Club of B. C., Vancouver, had two Moths and later two

## Notes on "Civil Aviation"

Eaglerocks in use at the city's temporary airport, and the Sprott-Shaw School of Aviation gave instruction in a Waco biplane. The summer was marked by numerous

aerial crossings of the Rockies—a flight attended with much more risk than that over the lighted and marked transcontinental route in the United States. There are neither emergency landing fields nor air beacons to guide the flyer through the Canadian Rockies.

The southern B. C. route through the Crow's Nest Pass was used by all planes. First, Mr. L. M. Lockhart's tri-motored Fokker flew in almost a straight line from Vancouver to Calgary over the mountains at 14,000 feet in four hours and 35 minutes. A month later Mr. and Mrs. Hal Hart flew from High River to Vancouver, with a stop at Grand Forks, in their Waco Taper-Wing.

Then a few days later a Western Canada Airways trimotor Fokker piloted by W. L. Brintnell made a flight from Winnipeg. Premier John Bracken was one of the passengers. The machine made the return trip over the same route. Capt. J. D. Parkinson of Montreal, holder of the Canadian altitude record, recently completed a trans-Canadian flight in his Curtiss Robin, flying from High River to Vancouver with stops at Grand Forks and Princeton. Other features of the summer's activity in Vancouver included the establishment of the Boeing Airplane Company's only branch factory, formation of a glider camp for next summer, and organization of a model aircraft league for boys. Plans for Vancouver's permanent airport on Sea Island, for which ratepayers voted \$300,000 purchase money in the spring, were advanced during the summer and actual construction work will be well under way by the middle of the winter.

### Schlee-Brock Aircraft Corp. Acquires Canadian-American Airline

"PHE Schlee-Brock Aircraft Corporation of Detroit has acquired the Canadian-American Airlines, Inc., operating between St. Paul and Winnipeg, Canada, and has inaugurated increased passenger service on the line. The Schlee-Brock company has also purchased a field at Minneapolis which will be developed into a terminal from which planes of the Canadian-American line will be operated next spring. The Schlee-Brock corporation also operates the Arrowhead Air Lines between Duluth and Port Arthur.

The Canadian-American Airlines operated for several months before the Schlee-Brock corporation acquired control. A Travel-Air six-place monoplane was operated by the company on a schedule of three round trips a week. Under the supervision of the Schlee-Brock company the Canadian-American airline will supplant a rail service of fifteen hours each way from the Twin Cities to Winnipeg, making a four-hour flight with four stops. The terminals which will be used are located at St. Paul municipal field, Wold-Chamberlin field, the municipal fields at St. Cloud, Fargo and Grand Forks, and Stevenson Field at Winnipeg. Lockheed cabin monoplanes will be used and connections will be made later with the Arrowhead Air Lines.

The Canadian-American Airlines and the Arrowhead Air Lines will be operated throughout the winter, and planes will be equipped with skis for landings and takeoff. The officers of the Canadian-American

Airline\*, Inc., are as follows: William S. Brock, president. Col. Ralph W. Webb, E.

## Notes on "Civil Aviation"

F. Schlee, H. D. Putnam, vice presidents  
J. F. Gould, secretary A. G. Schlee, treasurer,  
and F. D. Blair, assistant secretary  
and treasurer.  
The Schlee-Brock Corporation is agent  
for the Bach Aircraft Company of Los  
Angeles, Lockheed Aircraft Company of  
Los Angeles and the New Standard Aircraft  
Company of Paterson, N. J. Headquarters  
are located on the municipal airport  
at Detroit.

### 1929 : AIRWORTHINESS CERTIFICATES FOR EXPORT - TpHE participation of American aero-

\* nautical export trade in foreign markets  
is limited to a degree as the result of the  
International Aerial Navigation Conference  
which was held at Paris in 1919. While the  
effect of this conference is still felt, the  
limitation on American aircraft exports  
prevails only in the European and Australian  
markets. Exports to South America and the  
Orient were in no way influenced by the  
conference, and airplane licenses are issued  
according to the regulations of the South  
American or Far Eastern countries. Exports  
to Canada are regulated by a reciprocal  
agreement concerning airworthiness  
certificates, Canada being the only country  
with which such an arrangement for the  
export of aeronautical products has been  
made by the United States.  
It is in the European and Australian  
fields that the American export trade has  
approached a limitation that is MORE or  
less marked as a result of the International  
conference. The signatory nations at the  
conference undertook to prohibit the importation  
of aircraft unaccompanied by a  
certificate of airworthiness issued or indorsed  
by a state which was a party to the  
convention. The United States was not a  
signatory nation to the conference, and was  
included in the embargo placed on nonsignatory  
nations. American aircraft are  
limited, but not wholly excluded, as a result. There has been a movement in the United  
States to rewrite the Paris convention and  
establish a new international code governing  
airplane manufacture and certificates of  
airworthiness. With the United States as  
a signatory nation to the code, aeronautical  
exports to Europe and Australia would not  
be limited by the embargo which resulted  
from the Paris conference.  
With such a change effected the United  
States would probably extend the reciprocal  
agreement in operation with the Canadian  
Government to other nations. The procedure  
in effect under this reciprocal agreement  
requires manufacturers of aircraft to submit  
an application for certificate of airworthiness  
for export in triplicate form to  
the Aeronautics branch of the Department  
of Commerce. Three-view general assembly  
drawings must also be submitted in triplicate.  
An airplane which is being exported to  
Canada may be inspected either in the ordinary  
routine of factory inspection, or by  
a field inspector, and an inspection report  
submitted. The application and inspection  
report are checked for completeness and a  
Certificate of Airworthiness is made out in  
triplicate. The original certificate is returned  
to the applicant and must accompany  
the aircraft to be exported. A copy is forwarded  
to the Comptroller of Civil Aviation  
in Canada and the second copy is retained  
by the Aeronautics Branch.

#### Export Sales of Ryan Planea

THIRTY Ryan Broughams have been  
shipped to foreign countries over a  
period of 18 months by the Ryan Aircraft  
Corporation of St. Louis, according to a report

## Notes on "Civil Aviation"

of company officials. Nine planes were shipped to China and nine to Mexico; three planes went to Guatemala and three to Canada and one plane each was exported to Italy, England, Japan, Australia, Argentina and New Guinea. The planes, with spare parts, had a total valuation of \$390,000.

**N. A. C. A.** COWLTKC. Double Venturi CnvrhK 46" diameter, 18" high for 1-4 and J-1 Wright Whirlwind Motor! .cvt «Way to ihr» sontraction. 8pn «f Alubiut by Uagtry \* Swift.

This complete N. A. C. A. Low Drag Cowling .... the largest ever spun .... is fabricated by Magosy & Buscher for leading aircraft

builders. C Our facilities for spinning exceptionally large circles have enabled the Aircraft Industry to take full advantage of the superiority of spun metal construction ... in dural and aluminum spinners,

cowls, and wheel fairings.

**Magosy & Buscher**  
Specialists in Aircraft Streamlines  
120 WALKER STREET NEW YORK CITY



**N. A. C. A. COWLING**

Double Venturi Cowling for J-4 and J-1 Wright Whirlwind Motors and many other combinations. Also of Aluminum for Marine & Diesel.

This complete N. A. C. A. Low Drag Cowling .... the largest ever spun .... is fabricated by Magosy & Buscher for leading aircraft builders. Our facilities for spinning exceptionally large circles have enabled the Aircraft Industry to take full advantage of the superiority of spun metal construction ... in dural and aluminum spinners, cowls, and wheel fairings.

**MAGOSY & BUSCHER**  
Specialists in Aircraft Streamlines  
120 WALKER STREET NEW YORK CITY

December 1929 : Aero Digest : New Canadian Air Mail Lines

rjpwO new air mail lines were recently inaugurated in Canada, according to an official communique from the Postmaster-General of Canada. The two lines are Winnipeg to Calgary, via Regina, Moose Jaw and Medicine Hat. Regina and Edmonton, via Saskatoon and North Battleford.

No technical information concerning the type of airplane used or the schedules offered is available.

**COLONIAL WESTERN AIRWAYS**, operating between Albany and Toronto, established a new record for their traffic in October, when 12,557 pounds of mail were carried. This is a daily average of 465 pounds.

A report has also been current that the Colonial Air Transport has ordered five icewarning indicators for the use of its nightflying planes on C. A. M. No. 1, the Boston-New York route. These instruments, manufactured by the Moto-Meter Gauge and Equipment Corporation of Long Island City, New York, are installed on the struts of the planes and connected to a dial in the cockpit, which serves to warn the pilot of the dangerous air strata in which ice may form on the wings of the craft and force it down.

December 1929 : TWO International Lines Consolidate

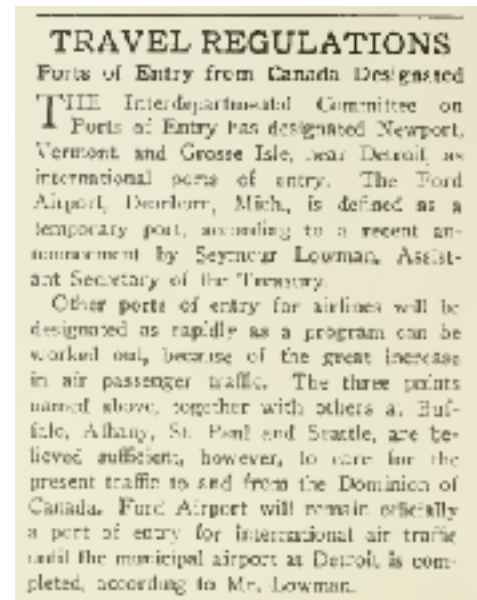
**THE** Arrowhead International Airlines, operating between Duluth, Minn., and Port Arthur, Canada, has been combined with the Canadian-American Airlines, Inc., of Minneapolis-St. Paul, under the name of the latter company. William S. Brock, vicepresident of the Schlee-Brock Aircraft Corporation of Detroit, is president of the combined lines.

A new field has been added to the holdings of the combined company at Minneapolis, 15 minutes from the center of the city and directly north. It lies along the West River road and is of ample size for use as a passenger terminal and a school, which is contemplated. The consolidation of the two international lines and the purchase of the field are steps in the expansion of the Schlee-Brock Corporation, which plans wide development of all its facilities in the near future.

## Notes on "Civil Aviation"

Practically all of the planes built in France are of wood construction and are monoplanes. In asking an engineer in a well-known aircraft factory why so much wood was used, I was informed that wood was preferred because it is cheaper and lighter than metal and because the replacement of broken parts is easier. It is also a fact that in France some of the larger aircraft factories use wood construction exclusively in building their larger planes for military and commercial use. The spruce used for longerons and spars in most instances comes from the northwest of America and Canada. Although much spruce grows in northern and eastern Europe, American spruce is of a better quality and has in many cases proved actually cheaper to ship from America than to handle by freight from European points.

The United States exports a total of 62 aircraft to Canada valued at \$685,712 43 engines valued at \$177, 946 and \$540,215 in aircraft parts and pieces during 1928. During the first 6 months of 1929 the US exports 64 aircraft valued at \$631, 172 , 21 engines valued at \$90, 641 and \$688,930 in parts. (US Dollars) "Canada, which was the leading market in 1928, was led by Mexico and Chile in the valuation of complete airplanes purchased during the first nine months. This may be explained in part by the increased activity in assembling United States aircraft in Canadian factories." Canada was replaced by Germany as the principal market for aircraft engines, the latter country taking 48 engines valued at \$315,576. "It is gratifying that all of the countries purchasing aircraft are stocking spare parts in order to maintain operation of the equipment. Soviet Russia in Europe, it is noted, is the second market of importance, while Canada, with about 90 per cent of its aviation equipment of American origin, is the most important market." (Aero Digest december 1929)



1929 : Non-stop flight made from Cranwell, England to Karachi in a Fairey Long Range monoplane.

1929 : Statistics Accidents 33, Pilots killed: 17, Pilots injured: 12, passengers killed: 17.

October 1929 : UK : In my research I have been told that "Canada has long worked with the USA in matters dealing with Airworthiness and Aircraft Operations"..... Here is a little gem from THE DEPARTMENT OF NATIONAL REVENUE REVIEW Vol. III No. 1 October 1929 Issued under the Authority of The Minister of National Revenue The Hon W. D. Euler, P.C., M.P. "The first aeroplane purchased by "The Yukon Airway's Company" was named "Queen of the Yukon, and arrived at Whitehorse in October 1927. Queen of the Yukon operated between Whitehorse and Dawson and Mayo most of the winter with indifferent success, having been forced down twice during cold weather on account of engine trouble. The aeroplane was wrecked on May 5, 1928, in making a landing at Whitehorse. The engine was salvaged and sent back to the factory to be overhauled. The engine was later installed in a new biplane, with a cruising radius of 500 miles. This aircraft flew from Colorado Springs to Vancouver and from Vancouver to Whitehorse by way of Kamloops, Prince George, Hazelton, Telegraph Creek and Atlin.

Question : "there appears to be no regulation covering the flying for pleasure of foreign owned aeroplanes in Canada, what would be the status of a foreign aeroplane, privately owned and not operated for commercial purposes, properly equipped, having the required certificates as to airworthiness, etc., with licensed pilot, when entering Canada and reporting to Customs and Immigration authorities.

(Dept' of Nat'l Defence) Check and Double Check : Answer : It will be seen from the Dominion Customs regulations that a Customs officer can at all times check all that has happened to such aircraft from the time of registration or manufacture. The Civil Aviation Branch controls all aircraft in Canada as to manufacture and airworthiness, licence and rigging specification, so that a double check is maintained at all times on all aircraft in use in Canada. Repairs made on a Canadian registered plane while in the United States are dutiable both as to parts and labour foreign-made aircraft and flown back to Canada. Duty is charged on such aircraft, less engine, if proof of export and identification is made of engine on return to Canada.

late 1920s : UK : Air Ministry - AID assumes inspection responsibility for rigid ships, R.100 and R.101 which were then being built.

1929: Amy Johnson obtains her Ground Engineer's "C" licence. The first British woman to do so.. On 5 May, 1930 22 year old Amy would fly the fourth 1928 model DH.60G Gipsy Moth built ser. no. 804 G-AAAH solo from London England to Darwin Australia, arriving May 24, 1930. For this feat she was awarded a £10,000 prize from the *Daily Mail* newspaper, issued with Australian civil

## Notes on "Civil Aviation"

pilot's licence No. 1 - issued under Air Navigation Regulations, 1921. She was also made "Commander of the Most Excellent Order of the British Empire" (CBE). G-AAAH was originally red and silver and was purchased with **long range tanks - giving a range of 13 hours flying time** - by RAF Captain Walter Hope as a **single seat long range variant** to obtain photographs of the British Royal family in Kenya for the Daily Mirror. Afterwards the aircraft logged 35,000 miles with Air Taxi's LTD.

Captain Hope sold G-AAAH to Amy for 600 Pounds. She borrowed 300 Pounds from Lord Wakefield and 300 Pounds from her father to make the purchase and G-AAAH was re-registered in her name on April 30th 1930.

The engine was then overhauled by "Jack" Humphries, and given a new a new coat of green and silver dope.

The name "Jason" was a contraction of "Johnson" and was also the trade mark of the Johnson family's fish trawling business in Hull. Jason had the front cockpit faired over, a cross axle u/c and it carried the spare prop.

There is a photo on page 131 of the DH 60 Moth (S McKay).

All DH 60 Moths were fitted with the inverted Vee front cabane struts.

1929 : American Moths :Licence-built in the USA by the MOTH AIRCRAFT CORPORATION at Lowell, Massachusetts in 1929,  
Licence-built in the USA D.H.60M Metal Moth. c/n. 118 registration was NC.917M (later owned as VP-AAM by Paul Mantz)



### Gipsy Moth Distributors and Dealers in USA :

Skyways, Inc., Boston, Mass.

Skyways, Inc., West Barnstable, Mass.

Skyways, Inc., Portland, Me.

Albany Air Service, Albany, N. Y.

Harris & Brown, Wellsville, N. Y.

Mobodo Aircraft Corporation, Plattsburgh, N. Y.

Utica Flying Service, Utica, N. Y.

Air Service, Inc., Johnstown, Pa.

Lancaster Airways, Lancaster, Pa.

Thompson Aeronautical Corp., Cleveland, O.

Thompson Aeronautical Corp., Detroit, Mich.

Thompson Aeronautical Corp., Kalamazoo, Mich.

Dixie Flying Service, Charlottesville, Va.

H. S. Jones, Fort Worth, Texas

Crook Company, Los Angeles, Cal.

Phil Davis, Oakland, Cal.

cities in which Moth demonstrations and service may be obtained:

Curtiss Flying Service

Branches

Boston, Mass.

Bridgeport, Conn.

Springfield, Mass.

Hartford, Conn.

Manchester, N. H.

Martha's Vineyard, Mass.

Providence, R." I.

Portland, Me.

Rockland, Me.

Worcester, Mass.

New York, N. Y.

Roosevelt Field. L. I.



## Notes on "Civil Aviation"

Valley Stream, L. I.  
Baltimore. Md.  
Philadelphia. Pa.  
Washington, D. C.  
Pittsburgh, Pa.  
Syracuse. N. Y.  
Buffalo, N. Y.  
Cleveland. O.  
Detroit, Mich.  
Moline, Ill.  
St. Louis. Mo.  
Chicago, Ill.  
Columbus, O.  
Kansas City, Kan.  
Houston, Texas  
Indianapolis, Ind.  
Oklahoma City, Okla.  
Louisville, Ky.  
Memphis, Tenn.  
Nashville, Tenn.  
Raleigh, N. C.  
Miami, Fla.  
Palm Beach, Fla.  
Toledo, O.  
San Francisco, Cal.  
Los Angeles, Cal.

### Distributors and Flying Clubs in Canada and the Provinces

Toronto, Ont.  
Montreal, Que.  
Winnipeg, Man.  
Calgary, Alta.  
Vancouver  
Halifax, N. S.  
St. John, N. B.  
Moncton, N. B.  
Granby, Que.  
Kingston, Ont.  
Ottawa, Ont.  
Hamilton, Ont.  
St. Catharines, Ont.  
London, Ont.  
Walkerville, Ont.  
Fort William, Ont.  
Regina, Sask.  
Moose Jaw, Sask.  
Saskatoon. Sask.  
Edmonton, Alta.

Wright Aeronautical  
Corporation  
Parts Distributors  
Boston, Mass.  
New York. N. Y.  
Philadelphia, Pa.  
Cleveland, O.  
Chicago, Ill.  
Dearborn, Mich.



## Notes on "Civil Aviation"

St. Louis. Mo.  
Kansas City, Mo.  
Los Angeles, Cal.  
Atlanta, Ga.  
Fort Worth, Texas  
Mexico City  
Wright Aeronautical  
Corporation  
Approved Service  
Stations  
Revere, Mass.  
Concord, N. H.  
New York, N. Y.  
Albany, N. Y.  
Syracuse. N. Y.  
Buffalo. N. Y.  
Pittsburgh, Pa.  
Evansville. Ind., Indianapolis, Ind.  
Terre Haute, Ind.  
Dayton, O.  
Cincinnati, O.  
Grand Rapids, Mich.  
Jackson, Mich.  
Kalamazoo, Mich.  
Mt. Prospect, Ill.  
Milwaukee, Wis.  
Wausau, Wis.  
St. Louis, Mo.  
Marshall, Mo.  
Oakland, Cal.  
San Diego, Cal.  
Santa Maria. Cal.  
Van Nuys, Cal.  
Greensboro, N. C.  
Spartanburg, S. C.  
Nashville, Tenn.  
Chattanooga, Tenn.  
Richmond, Va.  
Macon, Ga.  
Birmingham, Ala.  
Mobile, Ala.  
Daytona. Fla.  
Miami, Fla.  
Tampa, Fla.  
Jacksonville, Fla.  
Tulsa, Okla.  
Oklahoma City, Okla.  
New Orleans, La.  
Monroe, La.  
Shreveport, La.  
Dallas, Texas  
Houston, Texas  
Brownsville, Texas  
El Paso. Texas  
San Antonio, Texas  
Amarillo, Texas  
Big Springs, Texas

## Notes on "Civil Aviation"

December 1929 : NEGOTIATIONS for the distribution in Canada of Nicholas-Beazley parts and supplies and the Barling NB-3 monoplane have been completed with the Aeronautical Corporation of Canada, Ltd., recently organized at Winnipeg, according to W. F. Potter, export manager of the Nicholas-Beazley Airplane Co., Inc., of Marshall, Mo., manufacturers of the Barling plane.

A contract calling for 20 aircraft was placed by the Canadian concern, which has recently accepted delivery on the first two ships.

The Aeronautical Corporation of Canada was recently organized for the distribution of aircraft and aircraft supplies in Canada.

J. A. Sully, president of the Winnipeg Flying Club, is president of the company.

C. O. Borker, formerly purchasing agent for the Canadian Western Air Express, is the purchasing agent. According to officials of the new organization, branches will be established in the near future which will be located so as to offer immediate parts and supplies service to Canadian airlines and other operators. - aero digest

Canadian Aeronautic Figures, 1928 totals:

1. Government - subsidised Flying Clubs : 16
  1. Calgary Aero Club : 1,050 members
  2. Saskatoon Aero Club : 521
  3. Winnipeg Aero Club
2. Flying Club members : 2,403
3. Hours flown by club members : 8,124
  1. Calgary Aero Club :
  2. Saskatoon Aero Club :
  3. Winnipeg Aero Club
4. Private air pilots :
5. Commercial air pilots :
6. Air engineers :
7. Number of registered aircraft :
8. Licensed air harbours :
9. Number of airline operators :

Canadian Aeronautic Figures, 1929 totals:

1. Government - subsidised Flying Clubs : 16
  1. Calgary Aero Club : 1,050 members
  2. Saskatoon Aero Club : 521
  3. Winnipeg Aero Club :
  4. Toronto :
  5. Regina :
  - 6.
2. Flying Club members : 4,650 - end of September
  1. ab initio soloists : 325
  2. commercial licenses issued to flying club members : 32
3. Hours flown by club members : +13,000 - end of September
  1. Calgary Aero Club : 1,018 hours
  2. Saskatoon Aero Club :
  3. Winnipeg Aero Club : 1,202 hours, an increase of 200 hours over 1928..
  4. Toronto Aero Club : 912 hours
  5. Regina Aero Club : 835 hours
  - 6.
4. total Private air pilots licensed in Canada: 313 - an increase of 159 over 1928
5. total Commercial air pilots licensed in Canada: 296, an increase of 103
6. total Air Engineers licensed in Canada : 279, an increase of 80.
7. Number of registered aircraft : 397
8. Licensed air harbours / Airports: 61, an increase of 17.
9. Number of airline operators : 61
10. Imports from the United States during the first eight months of 1929:
  1. 58 airplanes valued at \$593,772,

## Notes on "Civil Aviation"

2. 19 engines valued at \$72,733, and
  3. Assorted airplane parts valued at \$629,551.
  4. total value of the eight months' imports from the United States : \$1,296,056.
11. Commercial flying in the Dominion.
1. 233 planes registered in 1928
  2. 64 planes registered in 1927,
  3. 397 planes registered and licensed in 1929

Based on the increase in aircraft, air mail poundage, flying club members, commercial pilots, air harbours, and miles flown, civil aviation authorities at Ottawa predict that Canadian aviation will more than double its activities in every line before the year is out.

The increase in Flying club memberships is due to membership drives, especially in the western cities, where private flying has gone ahead rapidly, and has taken the lead from the eastern centers.

**1929 : Total of 279 registered Air Engineers in Canada to date. Who are they?**

**1929 : 80 Air Engineers registered this year. - Who are they?**

1929 : Air-way operators : decreased from 53 to 45 during the first quarter of 1929, due to amalgamations of companies.

The total number of air operators now stands at 61.

Airplanes used by these operators are for the most part of American manufacture, English planes sold in Canada chiefly for private flying.

1928 : 277,184 pounds of air-mail were carried on contract routes.

The first six months of 1929 show 245,749 pounds carried.

New air-mail routes have been opened this year.

international traffic between Montreal and Albany has increased.

Two new points of international air mail clearance have been established at Buffalo and Detroit, daily services leaving Toronto for these points.

"Boat mail" now carried by air has added considerably to the amount of mail being carried by Canadian ships sailing from Montreal.

The time gained with carrying "Boat Mail" offsets the advantages of faster ships sailing from New York, by which much of the overseas mail from Canada was formerly sent.

Commercial operations of airway operators have increased both in the southern part of Canada and in the northern expanses. Planes are flying far north this year on scheduled routes, especially along the Mackenzie River basin, taking prospectors and fur traders between the various trading posts of the region.

One company reports a taxi service at Aklavik, 150 miles north of the Arctic Circle.

Aerial photography by commercial operators has increased, there being more operators employed in this work this year than ever before. Large sections of the Gaspé Peninsula in Quebec have been recently photographed, as well as other sections of Northern Quebec, Northern Ontario and British Columbia.

One firm completed two thousand square miles of photography during the second quarter of the year in Northern Quebec.

**1929 CANADA - USA RECIPROCAL ARRANGEMENT REGARDING AIRCRAFT : Reciprocal Arrangement Regarding Aircraft Income Tax Revenue**

Canada and United States regulations

Canada and the United States have recently concluded a reciprocal arrangement relating to the privileges which may be accorded to the aircraft of the one country within the territory of the other. In view of the annually increasing volume of

## Notes on "Civil Aviation"

"international air traffic" between these two countries, the arrangement, which is reprinted hereunder as it appeared in the "U.S. Treasury Decisions of 20th February, 1930":

- (1) All State aircraft other than military, naval, customs and police aircraft, shall be treated as civil aircraft and as such shall be subject to the requirements hereafter provided for civil aircraft.
- (2) Subject to the conditions and limitations hereinafter contained and set forth, Canadian civil aircraft shall be permitted to operate in the United States and, in like manner civil aircraft of the United States shall be permitted to operate in the Dominion of Canada.
- (3) Canadian aircraft, before entering the United States, must be registered and passed as airworthy by the Canadian Department of National Defence and must bear the registration markings allotted to it by Canadian Department of National Defence.
- (4) Aircraft of the United States, before entering Canada, must be registered and passed as airworthy by the United States Department of Commerce, and must bear the registration markings allotted to it by United States Department of Commerce, preceded by the letter " N " placed on it in accordance with the Air Commerce Regulations of the (United States) Department of Commerce.
- (5) Canadian aircraft making flights into the United States must carry aircraft, engine and journey logbooks, and the certificates of registration and airworthiness, issued by the Canadian Department of National Defence.
- (6) Certificates of airworthiness for export issued in connection with aircraft built in Canada imported into the United States from Canada as "merchandise" will be accepted by the Department of Commerce of the United States if the aircraft possesses a Certificate of Airworthiness issued by the Department of National Defence of the Dominion of Canada in accordance with its requirements as to airworthiness. Certificates of airworthiness for export issued in connection with aircraft built in the United States imported into Canada from the United States as merchandise will, in like manner, be accepted by the Department of National Defence of Canada, if issued by the Department of Commerce of the United States in accordance with its (Department of Commerce) requirements as to airworthiness. (Source The National Revenue Review - Issued Every Month by the Department of National Revenue J. Sydney Roe, Editor -Vol. III OTTAWA, MAY, 1930 No. 8)

### 28 December 1929 : USA Airworthiness - Trusting the Trustworthy <sup>209</sup>

N THE THIRD SECTION of the Air Commerce Act of 1926, which put the Federal Government into the business of aircraft regulation, there is a paragraph that has had but little notice from the Aeronautics Branch during the first two years of its existence, or from the general aeronautical public at any time. It reads : "As a basis for rating [of airworthiness of aircraft] the Secretary of Commerce may in his discretion accept in full or in part the reports of properly qualified persons employed by the manufacturers or owners of aircraft. The Secretary may accept any such examination and report by qualified persons in lieu of examination by the employees of the Department of Commerce. The qualifications of any person for the purposes of this section shall be demonstrated in a man specified by and satisfactory to the Secretary." These provisions were not slid into the law by its authors for mere love of complicating the language. They were inserted, upon presumably expert advice, with the expectation that they would be very definitely useful. It is gratifying to see an increasing tendency to make use of them. Most conspicuous of recent examples is the announced plan of approving repair shops competent to service and rebuild airplanes of specified types. An earlier and less spectacular example was furnished by the approval and rating of flying schools. The Aeronautics Branch is increasingly adopting the policy of investigating the qualifications of the man who does the work, be it welding of fuselages or teaching of students to fly, instead of confining itself to examination of the finished product.

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<sup>209</sup> [https://archive.org/details/Aviation\\_Week\\_1929-12-28?q=Air+Engineers%27](https://archive.org/details/Aviation_Week_1929-12-28?q=Air+Engineers%27)

## Notes on "Civil Aviation"

Emphatically a move in the right direction. The next step, already approached in a small and hesitant way, will be to accept as sufficient the verdict of the approved organizations. The graduate of a reputable medical school does not have to pass an exacting governmental examination upon his professional qualifications before being admitted to practice. The fact of graduation from a Class A institution is evidence of competence. The standard maintained by reputable flying schools receiving the approval of the Department should be high enough so that the ability of the students whom they graduate to pass any sort of test should be taken for granted. Still more clearly, the quality of the work done in an approved shop or factory ought to be so far beyond question as to make any inspection, except an occasional surprise check, quite redundant. The reputable organization that expects to stay in business cannot afford to turn out incompetent graduates or unsafe work. We have not yet attained the point of being able to sweep away detailed inspection, but we should be moving in the direction of decreasing its burden. The Department's latest proposal is of the sort that will make relaxation of inspection possible without increased hazard. We await further progress. Aviation - The OLDEST AMERICAN AERONAUTICAL MAGAZINE  
EDWARD P. WARNER, Editor. December 28, 1929

The Steamboat Inspection Service and the Bureau of Navigation have activities corresponding to the work of regulation of aeronautics, and they are estimated to receive together a total of \$1,770,655. or about 45 per cent more than is to be devoted to the regulation of aircraft.

The inspection force and the official staff in Washington are to be substantially increased under the new estimate.

During the fiscal year 1929 there had been on duty an average of 124 employees in Washington and 96 in the field (not including any of those engaged upon airway development work). The appropriation bill for the present year permitted changing those numbers to 129 and 92, leaving the total staff practically unaltered. For 1931, however, increases to 157 and 121, respectively, are proposed. The changes in Washington will be primarily clerical, and the most important increase in staff is in the field-inspection force, the number of aeronautical inspectors, senior and junior, being raised from 52 this year to 81 next. Four aeronautical engineers are to be added to the present force of eight. Of the total budget for aircraft in commerce \$748,500 will be allotted to salaries of employees

Source ref : THE FEDERAL BUDGET AND Aeronautics An Analysis of the President's Recommendations for Aeronautical Expenditures for the Coming Year - Aviation - The OLDEST AMERICAN AERONAUTICAL MAGAZINE  
EDWARD P. WARNER, Editor. December 28, 1929 pg 1255

aircraft Owner Liability UNDER THE Law By Hazleton Mirkil : That PART of the Uniform State Law for Aeronautics which is likely to affect most intimately the owner of commercial aircraft of whatever type, is the section which provides that the owner of every aircraft is absolutely liable for injuries to persons or property caused by the ascent, descent or flight of the aircraft, whether such owner was negligent or not. This

law has already been adopted by the legislatures of a dozen or more states and, in the natural course of events, is likely to find its way into the statutes of others in the near future.

To the owner, or to one who has leased a plane, for he, too, is made liable with the owner, this section of the Uniform State Law is of decided importance, because it offers him no escape from the payment of damages caused by his plane, even though they result entirely through the fault, no matter how great, of someone else, provided, of course, that that someone is not the person injured or the owner of the property which is harmed. It may be some consolation to the owner to be able to obtain an insurance policy to cover these damages but, after all, that is begging the question and, in any event, the stringency of this provision of the law would be reflected in the premium which he would be obliged to pay.

When a lawyer speaks of "negligence" as a branch of the law he refers to the body of the law covering civil, as opposed to criminal, liability for injuries caused to persons or property through wrongful acts, be they intentional or merely the result of failure to observe ordinary reasonable care.

An almost universal feature of the law of negligence is the requirement that there can be no liability without a corresponding fault, although to this general rule there are exceptions. One of these—perhaps the outstanding one—is that which provides that where the use of a particular instrumentality is attended with such extraordinary risk that it is, in itself, to be classed as inherently dangerous, the only care in its use which may be regarded as sufficient, is such care as shall operate to prevent injury.

In other words the user of such an instrumentality is made, under the law, an insurer against damage however caused. Is this exception to the general rule which has been incorporated in the law governing the ownership and operation of aircraft of those states which have accepted the Uniform State Law and, by this legislation, aircraft in those states have been put in a class of property more dangerous to own than explosives, corrosive acids, lethal gases or any of the numerous things popularly regarded as dangerous but the ownership and use of which, as far as the law of negligence is concerned, must be controlled, at most, only by the employment of all known means in practical use to prevent injuries to others.

The Uniform State Law was adopted in the first instance in 1923, and it is not to be doubted that, as far as the section providing for the responsibility for damage is concerned, those who drafted it were influenced by the Air Navigation Act adopted in England in 1920. The corresponding section of the English law is somewhat similar but with this very important difference, that by its provisions, damages are recoverable from the owner without proof of negligence by the one injured. In the opinion of two of the best known commentators on English law in relation to aircraft, this establishes the

rule of *res ipsa loquitur*—a thing speaks for itself—and, if so, the English law simply shifts the burden of proof from the one injured to the one causing the injury and makes it necessary for the owner to show to the satisfaction of the court or jury, as the case may be, that he was not to blame. This is a far different matter from fastening liability upon him regardless of his fault or even when the true cause of the damage is one of those occurrences or chains of circumstances so far beyond the control of anyone that they are known to the law as "acts of God."

When the authors of the Uniform State Law approached the subject of damages, it is probable that they had before them also, the decision in a very early case affecting balloons decided in New York in 1822. No doubt they were familiar too with a case adjudicated in Belgium in 1909. In the former case an aeronaut descended in a garden in the presence of some two hundred spectators who broke through fences and trampled down the vegetables and flowers. The balloon, in descending, did some small damage itself and the owner admitted his liability for that, but the court held that he must pay for all the damage done by the crowd as well. A German case went so far as to hold a balloonist liable for damages caused by a crowd to flowers trampled by them in rushing the better to see a balloon which was far beyond the garden.

The Belgian case of all cases concerning any feature of the law of aeronautics is, perhaps, the most remarkable in its facts. There a balloon began to descend near a small town by reason of loss of gas. The pilot, foreseeing a forced landing, chose a small open space beyond the town limits. As he was blown just above the roofs of the houses, with his ropes dragging in the streets, the townspeople, thinking that he wished to be drawn down, seized them, and in spite of his efforts to communicate his desire to be released, he was pulled toward the ground. In an effort to facilitate matters, he valved a quantity of gas. In the second story of a house a man was smoking: his cigarette ignited the escaping gas and the resulting explosion killed and injured a number of persons and destroyed property in the vicinity. The unfortunate aeronaut was obliged to pay for it all. The report of the case does not disclose the circumstances under which he escaped what would doubtless be considered the worse fate of his undesired ground crew.

source :Aviation - The OLDEST AMERICAN AERONAUTICAL MAGAZINE  
EDWARD P. WARNER, Editor. December 28, 1929 pg 1260

Quebec Safety League  
Forms Aviation Branch  
MONTREAL (que.)—

An Aviation Safety Committee has recently been organized by the Province of Quebec Safety League. The purpose of this committee will be "to promote safety principles of aviation by fostering a sense of responsibility among airplane manufacturers and pilots, and to create by investigating and explaining to the public the causes of accidents that Officers of the group are as follows:

Maurice J. Quedrue, managing director of the Compagnie Aerienne Franco- Canadienne;

## Notes on "Civil Aviation"

Maj. Eric E. G. Adams, late of the Royal Flying Corps and Royal Air Force ;  
Capt. Arnold H. Sandwell, late of the Royal Naval Air Service and Royal Air Force, and Aviation Editor of the Montreal Daily Star;  
Capt. George K. Trim, late of the Royal Flying Corps, Royal Air Force and Royal Canadian Air Force;  
Dr. George Milette, medical examiner of pilots and himself the holder of a private pilot's license;  
Adelard Raymond, late Lieut. R.F.C., and R.A.F. ; and  
Arthur Gaboury, secretary general of the Province of Quebec Safety League.  
Miss Claudine Brais, business manager of the Compagnie Aerienne Franco- Canadienne and herself an aviatrix, is the secretary.  
Hon. Nonore Mercier, Minister of Lands and Forests of the Province of Quebec, is the honorary president, with  
Mr. A. J. Wilson, Director of Civil Aviation in the Dominion of Canada as honorary vice-president, and  
Col. Wilfred Bovey, Director of Extra-Mural Relations at McGill University, Montreal, as honorary vice-president.

New Bellanca  
Dominion Corporation  
NEW CASTLE (del.) — Information  
received from Montreal by the Bellanca  
Aircraft Corp., here, states that a company  
known as the Bellanca Aircraft of  
Canada, Ltd., has been formed This  
new organization succeeds and takes  
over in its entirety Bellanca Aircraft of  
Canada, Reg., which was organized in  
August, 1929, for the purpose of acting  
as representative in the Canadian territory  
for Bellanca Aircraft Corp., New  
Castle, Del. R. B. C. Noorduyn, assistant  
to the president, represented Bellanca  
Aircraft Corp., in the negotiations  
in Canada.  
The Canadian organization has been  
formed by Canadian men and is financed  
by Canadian capital. It is not a subsidiary  
of the Bellanca Aircraft Corp.,  
but has contracted with the American  
company for the exclusive right to distribute  
and service Bellancas in Canada.  
Bellanca Aircraft of Canada, Ltd., is  
capitalized at 6,000 shares of no par  
value, of which 3,000 are issued. At  
a recent meeting of the stockholders the  
following officers were elected: D. M.  
Martin, president and general manager  
H. S. Day, vice-president and treasurer  
J. O. Rae, sales manager; and John  
Ball, secretary. The board of directors  
includes D. M. Martin, H. S. Day,  
J. O. Rae, T. H. P. Molson, and F. R.  
Whittal. .number of Bellanca planes of both  
land and pontoon equipped types have  
been sold and placed in service in  
Canada. One purchase was that of  
three convertible land and seaplanes  
by Commercial Airways, Ltd., of Edmonton,  
Alberta, to be operated over  
an air mail route of about 1,800 mi.  
down the Mackenzie River from Fort  
McMurray to Aklavik on the Arctic



Ocean.

"As soon as conditions warrant, we plan to establish a Canadian factory for Bellanca planes under our agreement with the Bellanca Aircraft Corporation so that we can produce airplanes by and for Canadians free from annoyances and expense involved in importation, said Pres. Martin.

OTTAWA (ont.)—Work has started on the huge tank being built here by the National Research Council which is to be used for testing new designs in seaplane floats. The tank is to be 400 ft. long, 6 ft. deep, and 8 ft. wide and it is planned to draw the models through the basin at a 30 ft. per second speed. This device, the first of its kind in this country, will become part of a laboratory for making aerodynamic experiments, to be undertaken by the aeronautical research branch of the division of physics and engineering. Several men under the direction of Prof. J. D. Parkin, formerly of Toronto University, will comprise the staff. Other projects will include a wind tunnel, 9 ft. in diameter, equipped with a 600 hp. engine and capable of developing an air stream with a velocity of 150 m.p.h.

DURING the next generation no material factor will modify our civilization more effectively than aviation," declared J. A. Wilson, Controller of Civil Aviation for Canada, "Civil aviation in Canada dates back to the close of the Great War. Many of our pilots returned eager to take up peace-time flying, but they found no market for their ability. It was not until the early summer of 1919 that plans for the use of aircraft in forestry reconnaissance were ordered near Quebec.

"The people of Canada bent on doubling at least the productive areas of the Dominion, set themselves the task of rolling back their Northern frontier. Naturally, better means of transportation was the first need. Using the then sole means of transport, the canoe, the pack train and in winter the dog team, the covering of hundreds of thousands of square miles was a physical impossibility. A few men who had traversed the region knew something about it, but our maps had many areas, which for lack of definite information were either marked unexplored or left blank.

"The successive Governments, both Provincial and Dominion, were quick to see the possibilities of aircraft as an aid in solving the problem of Northern exploration and development. They lent their aid by the organization of such activities as would facilitate travel, observation and transport. Of course, the progress was slow for the first two or three years. War craft were not suitable for commercial endeavors. The first interest in flying was slight, pleasure planes and stunt flyers were making no money. Only those interested in the administration of the Northern areas and their exploration and development strongly supported the flying services in their endeavor to adapt this new form of transportation to the very different conditions existing in the North. Although an Air Board Act had been passed and the first Air Board formed, in 1923 there were important changes in the organization of the flying services. The Air Board became part of the newly formed Department of National Defence. The Civil Operations Branch was merged with the Royal Canadian Air Force and continued as a part of that Branch until July, 1927, when it was again separated from distinctly military work. The Air Board was quick to see the value of the airplane in dealing with forest fires. Perhaps only those who have lived in Northern and Western Canada appreciate fully the need for adequate fire protection in the forest and on the prairie.

"A few months after the Armistice was signed, plans were perfected for trials of flying boats over the Northern forest. The Dominion Government, the Forest Service of the Province of Quebec, and one of the large pulp and paper companies shared the expense. These experimental flights made in 1919 were so successful that they led to the establishment in 1920 and 1921 of air stations at Jericho Beach, Vancouver, at Morely and later at High River and Roberval. the Provincial Governments

## Notes on "Civil Aviation"

of Quebec, Ontario, Manitoba and British Columbia lending generous aid and co-operating in every way they could to insure the success of this new forest reconnaissance. By the end of 1923 the provinces took over the organization of their own flying operations. The Dominion Government has since concentrated its efforts in the building up of an efficient air organization to meet its own requirements. Permanent bases for the repairing and maintenance of aircraft, the laying of gasoline caches through all the territory served, the establishment of radio stations to improve communication, and the design and construction of new types of aircraft especially that of the Canadian division, have all come under its supervision. From a few improvised bases from which were operated the scanty fleet of H. S. 2L and F3's, the service has now grown so that it covers all Northern Canada and serves not only for its forest protection, but a great variety of other useful work as well.

"The Civil Government Operations Branch under the Department of National Defence now maintains:

No. of Officers 74

" " Airmen 249

" " Aircraft 86

" " Central Depot 1

" " Main Stations 3

" Sub-Bases 11

" " Caches 120

" " Wireless Stations 15

" " Photographic Detachments 8

Flying is an every-day business in Canada.

Many of the pilots have records, which if made in the full glare of publicity would have made them famous.

In the North they are part of the day's work and excite no public attention. These men are fitting successors to Frobisher, Hudson and Davis. In the many thousands of hours of flying done during the past six years in the far North, not one single accident involving death or serious injury has occurred. Considering the unusual conditions under which this work has been done, this record stands as a remarkable testimony to the skill of the flying personnel.

It hits flying service, though it cannot in the circumstances return an actual cash dividend to the Government for services rendered, is self-sustaining in every sense of the word since it is maintained because of the services that use it and find it efficient and cannot well do without it. "The Provincial Air Service of Ontario, which was formed in 1923 as a branch of the Department of Lands and Forests, now has functions similar to those of the Dominion Civil Government Air Operations Service, and do a great variety of useful work all through the Northern districts of Ontario. They maintain 4 service stations and 10 sub-bases. 30 commercial pilots. 27 air engineers and 25 aircraft.

Canadian aviation has grown without subsidy because it has filled an economic need. It is to the credit of the air pioneers that they have been able to operate wholly on their own revenue, furthermore, under conditions

## Notes on "Civil Aviation"

which are often strenuous. Some aircraft go out from their bases, and like the birds, stay out without shelter during the whole season. Between overhauls they never see a hangar. An improvised base on the bank of a lake or river is all the home they have. So far it is only at the main bases that machine shops and slipways have been provided. The inventiveness of the pilots has many times resulted in characteristic Canadian aeronautical equipment which is quite unique but nevertheless effective.

Source ref : Aviation - The OLDEST AMERICAN AERONAUTICAL MAGAZINE  
EDWARD P. WARNER, Editor. December 28, 1929

31 December 1929 : During the year a total of 305 (308) persons were on record as holding Canadian Air Engineer Licenses"

- a) 212 persons were licensed as "Air Engineer" only.
- b) 96 of these Air Engineers were also licensed as Pilots.
- c) a total of 150 "Unlicensed Engineers" were identified as holding only an "Air Mechanic" certificate.

(Air Annual 1932-33 pg 17, 19, Civil Aviation - Canada)

**CANADIAN AVIATION - 1930**

1930 : The board of Directors of Imperial Airways elevate Woods Humphrey to the position of Managing Director.

28 Feb 1930 : FLIGHT : EDITORIAL COMMENT : There are three systems under which air services are helped by Governments in the British Empire:

1. by the grant of a subsidy [adopted by His Majesty's Governments in Great Britain, in Australia, and in South Africa]
2. by the grant of a mail contract by the Post Office [favoured in Canada]
3. the operation of an airway by the Government itself. [occurs only in India, though in 1925 the South African Government ran an experimental air service between Capetown and Durban for three months]

28 February 1930 : FLIGHT : THE H ALTON AERO CLUB have several lectures arranged

1 during March, the first of which will be Wind Tunnel Application to Slotted Wings by Mr. C. D. Russell of Handley Page, Ltd., The Application of Diesel Engines to Aircraft by A. Chorlton, and Metal Construction of Aircraft by A. A. Jacobs. A separate Gliding section has been formed and will be affiliated to the British Gliding Association (B.G.A.). An excursion was arranged to the Gliding lecture given by Dr. Georgii before the R.Ae.S. on February 19. The Sparrow is being reconditioned with the help of A.A. volunteers, by Mr. Gamon. Mr. F. J. Sanger has been elected Assistant ; Hon. Secretary. A silver and a gold medal ; will be awarded annually for the best lectures ! by A.A.'s Announcement of the latest Supermarine flying boat, the Air Yacht with three Armstrong-Siddeley geared "Jaguar" engines mounted direct on the wing.

De Havilland Aircraft of Canada, Ltd. ACCORDING to the first annual statement, covering 13 months, the De Havilland Aircraft of Canada, Ltd., earned trading profits, after providing for depreciation but before provision for Federal income tax in the period ended September 30, 1929, of \$85,238. From this amount \$7,500 was taken for discount on sale of shares, \$297 for organisation expenses, \$6,873 was reserved for Dominion income tax and \$10,170 for dividends, and the balance carried forward was \$60,067. Mr. R. A. Loader, general manager, in addressing the shareholders, expressed satisfaction at the results achieved.

During the year 130 Moth aircraft were delivered, mostly of the new metal fuselage type, with the company's own

Gipsy " engine as a power plant. A considerable proportion were seaplanes, and 95 per cent, were fitted with Handley Page slot gear. Among the chief orders executed were 34 land 'planes for the Dominion Government and six seaplanes for the re-equipment of the Royal Canadian Air Force ; quantity of seaplanes for the civil government, equipped with radio communication, as well as 'planes for the Ontario Provincial Air Service, numerous clubs, for private use, and flying schools, operating concerns and prospecting companies. Use of 'planes for northern exploration was a notable development.

1930-31 - air regulations Canada :

1. All aircraft in Canada are governed by the air regulations.
2. pilots must keep a log book covering commercial aircraft
3. pilots must keep a journey log book recording the trip just finished,
4. the log book covering commercial aircraft must show:
  1. category to which aircraft belongs,
  2. nationality and
  3. registration marks,
  4. Owners' full name, nationality and residence
  5. name of aircraft builder
  6. carrying capacity,
  7. type and series numbers of engine, and maker's name
  8. type and series numbers of propeller, pitch, diameter and maker's name,
  9. type of wireless apparatus fitted,
  10. table showing rigging data,
  11. detailed engineering record of :

## Notes on "Civil Aviation"

1. aircraft tests,
2. overhauls,
3. replacements,
4. repairs, etc.

The term "airport of entry" in the United States regulations means "an airport designated by the Secretary of the Treasury as a port of entry for civil aircraft".

Trans-Canada Air Lines carried 22,322 passengers during 1939

07 January 1930 : International Airways Fokker Super Universal CF-AJG hits a tree in Whitby Ontario during attempt to land in dense fog.

1930 : UK - both BAIG and Lloyds applied to the Secretary of State for an extension to their role in -

1930 : UK : Society of British Aircraft Companies / constructors (S.B.A.C) complain of the large number of different standards which an aircraft had to meet in order to be certified as Airworthy by the Air Ministry, and to the costly and complicated machinery needed to put them into operation. SBAC state "The Air Ministry lays down Requirements on matters regarding which there is little or no experience, thus suppressing initiative and retarding the development of civil aircraft." and "There appears to be confusion in the minds of Air Ministry Officials as to what constitutes airworthiness and what is a desirable commercial feature."

late 1929 : January 1930 : The 1st KARACHI-DELHI Air mail flight : Imperial Airways' D.H. "Hercules" air liner "City of Delhi" at Karachi for the extension of the England-India air route between Karachi and Delhi.

23 January 1930 : Western Canada Airways now known as Canadian Airways Ltd : purchases new Boeing 40B-4 registered as CF-AIN

1930 : Junkers experiments with "Elektron" allow. Elektron however is "Self Combustible"

1930 : Beverley Shenstone helps prepare Junkers 50 "Junior" for flight from Dessau to Tokyo (pilot Yoshuhara Seiji)

05 February 1930 : First Canadian woman to be issued a Commercial Pilot's License : Mrs. J.M Miller

February 1930 : Alexander Lippisch publishes "Tests on Tail-less Aircraft" in L'Aerophile, France.

February 1930 : The Forty-Fourth Annual General and General Professional Meeting

Convened at Headquarters, Montreal, Montreal, January 23rd, 1930 and adjourned to the Chateau Laurier, Ottawa, Ontario, February 12th, 1930.

### Report of the Committee on Engineering Education

The President remarked that Eraser S. Keith, m.e.i.c, (the chairman of the committee on Engineering Education) who was unfortunately unable to be present, had hoped that there would be discussion on the recommendations of that committee, and he asked the Secretary to read the report containing them.

In regard to these recommendations, E. M. Proctor, m.e.i.c, drew attention to the committee's fourth recommendation, that immediate steps be taken to confer with university heads with a view to adopting a six-year course for engineers.

This course Mr. Proctor thought inadvisable, if it contemplated a "six-year" college course, although he believed that two years of practical experience at the end of a four-year course would be a satisfactory arrangement. He then moved that suggestion number four be referred back to the committee, and his motion, being seconded by J. B. Carswell, m.e.i.c, was carried unanimously. Discussion followed, in which A. F. Baird, m.e.i.c, commented on the fifth

## Notes on "Civil Aviation"

recommendation, namely that the universities be urged to give consideration to the inclusion of public speaking and literature in the curricula of their engineering courses. He felt that if the whole of the college training of an engineer had to be covered in four years, it would be impossible to give additional time to such a subject, and was doubtful whether it would be desirable to adopt this recommendation, though he would not press this point to a motion. Messrs. J. W. Whyte, M.E.I.C, George R. MacLeod, m.e.i.c, O. O. Lefebvre, m.e.i.c and J. A. McCrory, m.e.i.c, took part in further discussion on this report.

### Report of the Committee on Publicity

The report of the Committee on Publicity, of which Mr. Keith was also chairman, was next given consideration. In Mr. Keith's absence, it was presented by W. C. Adams, m.e.i.c, who pointed out that the benefits arising from well-managed publicity had been illustrated by the very successful activities of the Ottawa Branch in connection with the present meeting. Mr. Adams drew attention to the fact that the various recommendations of the Committee on Publicity were difficult if not impossible to carry out in the present state of the finances of The Institute, and the discussion was continued by F. P. Shearwood, m.e.i.c, and others. The President suggested that in view of the amount of business before the meeting it would perhaps be desirable to take together those reports upon which comparatively little comment would be expected. Among these he would name the reports of the Library and House Committee, the Board of Examiners and Education and the Service Bureau Committee. The reports were, however, open for discussion. There being no further comment, W. G. Mitchell, M.E.I.C, moved that the following reports be received and adopted: the Reports of Council, Finance Committee, Library and House Committee, Legislation Committee, Board of Examiners and Education, Service Bureau Committee, Canadian National Committee of the International Electrotechnical Commission, Committee on International Co-operation, the report of The Institute's members on the Main Committee of the Canadian Engineering Standards Association, and those of the Honour Roll and War Trophies Committee and the Committee on Publicity. This motion was seconded by George R MacLeod, m.e.i.c, and being put was carried unanimously.

### Report of the Committee on the Relations of The Institute with the Provincial Associations of Professional Engineers

On the suggestion of S. G. Porter, m.e.i.c, the chairman of the committee, the Secretary outlined the leading features of its report, and stated its final conclusions, after which Mr. Porter, in a striking address, gave his views on the present situation. He remarked that if the scheme proposed by his committee were carried to its conclusion, with the support of the associations, the election of the Council of The Engineering Institute of Canada would be in the hands of men who would all be members of one or other of the provincial organizations. The Institute thus becoming a co-ordinating body.

Mr. Porter then commented on the seven recommendations of his committee, and said that in his opinion a system similar to that outlined by his committee afforded the only way in which the engineering profession in Canada could reach real consolidation and solidarity. The profession would then form one Dominion-wide body of engineers and would attain a position which would give it a strength and influence which it had never yet possessed in Canada. If there were a Dominion-wide organization, embracing all the engineers in Canada, into which only those would be admitted who had received proper education and training, engineering could properly take its place along with the other professions.

The public would then be able to rest assured that when an engineer belonged to this Dominion-wide body and was also registered in his province as being able to practise engineering, he must have received proper training and experience; this would give the engineer a definite standing, with a resulting increase in the confidence felt by the public in the engineering profession. Such a development would take time, but by deciding on a common high standard and living up to it, the whole body of engineers would be in a position far superior to that held to-day. Further, such action would do much to discourage the practice of going outside of Canada to get engineering work done, and the engineering profession would be more favourably known to the Canadian people and to the industries and governments of Canada. Mr. Porter believed that upon an analysis of the problem it would be found to be one which could be solved if we had the will to solve it, and he hoped that his committee's report would convince the meeting that this was the case.

The President pointed out that the report had already been received and adopted by the 1929 Plenary Meeting of Council, after prolonged discussion, but that Council properly felt reluctant to embark on a policy of this kind until it had been endorsed by the Annual Meeting. He would ask Mr. Porter to move the reception and adoption of this report so that the opinion of the meeting might be taken. It was accordingly moved by S. G. Porter, m.e.i.c, seconded by George R. MacLeod, m.e.i.c, that the report of the Committee on the Relations of The Institute with

## Notes on "Civil Aviation"

Provincial Associations of Professional Engineers be received and adopted.

The discussion was opened by P. B. Motley, m.e.i.c., who stated that in his opinion the Provincial Associations were now in somewhat the same position as the Canadian provinces at the time of Confederation, and the policy advocated by Mr. Porter's committee, if put in effect, would have the same beneficial results as Confederation had for the Dominion. He thought that the benefits of such a policy had been strikingly shown by the progress made by the Canadian National Railways since the various roads constituting that organization had been brought together and consolidated. He hoped that the committee's report would be endorsed and that the committee would be placed in a position to continue and develop its work.

He was followed by J. I. Busfield, m.e.i.c., who was unable to agree with Mr. Porter or Mr. Motley, and considered that the policy recommended in the committee's report was undesirable from the point of view of The Institute. He felt that the distinction between the real purposes of the Professional Associations and those of The Engineering Institute of Canada had not been sufficiently emphasized. While he was himself quite in accord with the committee's sixth recommendation, he could not approve of the seventh, feeling that if membership or registration in a Professional Association were made a requirement for admission to corporate membership in The Institute, this would exclude from The Institute hundreds of men who ought to be members, having regard to the fact that one of the principal objects of The Institute is educational. If recommendation number seven were acted upon. The Institute would practically be handed over to the Professional Associations, and he would deprecate putting The Engineering Institute of Canada under the control of any group of associations with such diversified constitutions and powers. If the action contemplated in the seventh suggestion were to be postponed until the associations had themselves attained uniformity, this would involve a long period of waiting, and to his mind the possibility of standardizing the various provincial acts was very remote. The provincial legislatures, in passing these acts, had done so for the purpose of protecting the public, not for the protection of the engineers, and he felt that the difficulty of obtaining uniformity in provincial legislation was almost insuperable. He further believed that even if the provincial associations were co-ordinated so as to form a coherent body, the objects and purposes of that body would certainly not be identical with those of The Engineering Institute of Canada, and he did not see that The Institute could function as such an organization. Mr. Busfield pointed out that two policies appeared open to The Institute at the present time, on the one hand that of confederation with the Professional Associations, a course which was admittedly beset with great difficulties, and on the other hand there was the course of independent growth which he considered far safer and more promising, as it would permit The Institute to develop along its own lines independently of the provincial associations. After expressing appreciation of the great amount of work accomplished by Mr. Porter and his committee, P. L. Pratley, m.e.i.c. observed that the committee's report had not convinced him that the objects of The Institute were "in many respects identical" with those of the Professional Associations. In his opinion educational effort and legislative functions should be divorced. He felt that the committee, before making a proposal for co-ordination, integration or confederation, should have studied the various duties of the associations on one hand and The Institute on the other to see whether such action would be possible. Mr. Pratley pointed out that at the time when the professional associations were formed there was a natural desire to protect the engineer, and this was, in fact, the motive which prompted the action then taken.

The provincial legislatures, however, would not accept that point of view, being concerned with the protection of the public, and this had led to many changes in the provincial acts. He believed that the work of the committee should be the study of co-ordination of the associations rather than endeavouring to combine The Institute with these various bodies. If the differences in the functions of the associations and of The Institute were clearly realized, it would be seen that there must necessarily be a difference in the qualifications for membership. Mr. Pratley was quite opposed to the fifth recommendation of the committee, contemplating the adoption of uniform requirements and qualifications for admission as between the associations and The Institute. He thought it quite right that there should be a standard requirement for all the associations for registration purposes, but did not think that The Institute should adopt the same requirements or necessarily have the same membership as the associations. Many hundreds of men interested in the engineering profession and employed in the technical offices of large corporations should have a place in The Institute, which could offer them educational advantages and the information and experience of senior members. These men in the offices of large companies had no intention of practising engineering as a profession, and did not need licenses to practise, since they carried on their engineering work under the guidance of those who were in responsible positions. In his opinion there was no need for many of these junior members to belong to any professional association, but they certainly should belong to The Institute. Accordingly, he thought it would be wrong on the part of The Institute to exclude them from its membership simply because of the special requirements for membership which might properly be insisted upon by the associations. Mr. Pratley felt that the committee's report had failed to distinguish clearly between the functions of the various organizations and had come to the wrong conclusion.



as to the necessity for uniform requirements for admission.

H. N. Mason, a. m.e.i.c, believed that although some of the professional associations were operating under acts which gave them but little power, it was wrong to continue to divorce The Institute from the professional associations. The Institute must co-operate with such associations so that engineers throughout the country could co-ordinate their efforts. D. W. McLachlan, m.e.i.c, continued the discussion, and was of the opinion that The Institute should accept the membership of those belonging to professional associations, but he saw no reason why there should not be a large number of additional members belonging to The Institute and not belonging to any association.

E. M. Proctor, m.e.i.c, drew attention to the suggestion in recommendation number seven that membership or registration in a professional association be a requirement for admission to The Institute, and enquired whether if this were put into effect difficulties would not arise in regard to engineers from the United States, Great Britain and elsewhere who desired to join The Institute. He hoped that the professional associations would aid in defraying the cost of the further investigations contemplated by Mr. Porter's committee.

C. G. Moon, A. M.E.I.C., did not think that amalgamation with the provincial associations would be a good thing for The Engineering Institute, and held that The Institute should go on its way as an educative body, taking in every man who was sincere in his desire to become an engineer and follow the engineering profession. This might involve a slight lowering of The Institute's present requirements for admission, but he believed that it would be in the true interests of the engineers of the country and of The Engineering Institute of Canada.

G. E. Bell, M.E.I.C, referred to the very large proportion of the membership of The Institute which consisted of employees of contracting manufacturing corporations, and pointed out that while these men were not interested in the question of registration for private practice, they were interested in belonging to a technical organization whose function was educational, and consisted in the exchange of professional experience and information. He thought that The Institute had a great deal to gain from the membership of such men, and feared that if the scheme contemplated by Mr. Porter's committee went into effect, a large number of them would resign from The Institute and possibly join other organizations.

A. F. Baird, m.e.i.c, fully endorsed the report of Mr. Porter's committee and believed that it would have the support and approval of the professional associations in New Brunswick and Nova Scotia. Professor Baird could assure those who doubted whether the associations really protected the public that in New Brunswick, where they had a rather strict act, several cases had occurred where the association had proved its value in this respect, and he would point out that effective acts existed in other provinces also. The discussion was continued by A. F. Macallum, m.e.i.c, J. B. Carswell, m.e.i.c, F. H. Peters, M.E.I.C, B. S. McKenzie, m.e.i.c, and A. J. Grant, m.e.i.c. J. L. Busfield, m.e.i.c, believed that sufficient differences of opinion had been expressed during the discussion to justify further consideration of the report, and he therefore moved as an amendment to the main motion that this meeting approve of the principle of The Engineering Institute of Canada helping the provincial associations of professional engineers to standardize their requirements, and co-ordinate their activities, but that we do not commit ourselves to definite action of combining with them until such time as it has been found possible to co-ordinate the professional associations.

J. P. Hodgson, M.E.I.C., read a telegram' which he had received from the registrar of the Association of Professional Engineers of the Province of British Columbia urging The Institute to encourage all its members to comply both in spirit and letter with the engineering acts of the various provinces since this course would aid the movement for confederation. Colonel H. J. Lamb, m.e.i.c., remarked that when the movement for closer relations between The Engineering Institute of Canada and the Provincial Associations was initiated, he was president of the Ontario Association, and at that time was impressed with the great difficulties attending the carrying out of such a scheme. Since that time, having served as a member of Mr. Porter's committee, he had entirely changed his mind and now believed that it would be in the interests of the engineering profession throughout the Dominion if the movement were successful. He was sure that The Institute would prosper and be better able to help engineers throughout the country if such relationship could be brought about. Colonel Lamb was strongly in favour of standardizing the requirements for admission to the professional associations and particularly those as regards admission by examination. He hoped that the meeting would give its support to the movement by approving the report of Mr. Porter's committee. After further discussion, the President pointed out that Mr. Busfield's amendment had not been seconded, and Mr. Pratley, in seconding it, remarked that while the majority seemed quite ready to help in furthering some form of co-operation between the various provincial associations, he believed there were quite a number who would hesitate in committing The Institute to the adoption of the fifth recommendation in the report. He felt that Mr. Porter's committee was to be commended, it had done a great deal of admirable work and should continue that work in the direction of persuading if possible the professional associations to get together and standardize their own attitude. He thought The Institute should await some such action on the part of the associations before committing itself to the approval of uniform regulations for admission.

Harold S. Johnson, m.e.i.c., observed that there were many members of the Association in Nova Scotia who were not members of The Engineering Institute of Canada and were not likely to become members. The present meeting was of course a general meeting of The Engineering Institute of Canada but could not be considered as being fully representative, as it could not bring expressions of opinion from each of The Institute's Branches. He did not think that a vote of this meeting could, therefore, be regarded as expressing the views of the whole membership.

The President pointed out that Mr. Porter's committee comprised representatives from all parts of the country, and that its report had been considered and approved by a Plenary Meeting of Council, at which Councillors from almost all the Branches were present. He believed that the Council had been satisfied that the Branches were generally in favour of the proposals. Council had, however, been reluctant, notwithstanding this general approval, to embark

## Notes on "Civil Aviation"

upon the proposal until it had been formally endorsed by the Annual General Meeting.

Mr. Busfield enquired whether it was the intention to put immediately into effect the suggestion in the seventh recommendation that amendments to The Institute's Bylaws should be secured so that membership or registration in a professional association be one of the requirements for admission to corporate membership in The Engineering Institute of Canada. The President replied that it was not the intention to take immediate action in this respect; Mr. Busfield then said that in such a case he would be willing, with the permission of his seconder, to withdraw his amendment. The President remarked that as recommendation number seven would not come into effect until numbers five and six had become operative, the necessity for Mr. Busfield's amendment was not so apparent. On Mr. Pratley's agreement, the amendment was then withdrawn. After further discussion, the main motion was put and carried, one member dissenting.

13 February 1930 : First Technical Session

On Thursday, February thirteenth, the technical sessions began, the papers presented being as follows: In the Assembly Hall, under the chairmanship of O. O. Lefebvre, m.e.i.c.,

### Rigid Airships

E. W. Stedman, M.E.I.C, Group Captain, R.C.A.F., Chief Aeronautical Engineer, Department of National Defence, Ottawa. Paper presented at the Annual General Meeting of The Engineering Institute of Canada at Ottawa, Ont.,

Discussion of Paper on Rigid Airships : Major-Gen. a. G. L. McNaughton, m.e.i.c. (Department of National Defence, Ottawa, Ont.) General McNaughton remarked that the information which the author had given to The Institute was particularly apt at the present time when the great experience in the lighter-than-air field which was initiated in Great Britain in 1924 had reached the point where the new airships were completed and were undergoing their air trials. To engineers this project would be of particular interest because it was an excellent example of the application of scientific methods to the solution of a major problem.

In hearing Group-Captain Stedman's paper he had been struck with the fact that the early development of the airship was rather haphazard and that experience had been bought at the cost of some rather tragic failures.

On reviewing the history of these failures it seemed evident that empirical methods of design had persisted long after the other branches of aeronautical engineering had been placed on a thoroughly sound scientific basis.

To the Air Ministry, acting on the advice of the Committee which had investigated the loss of the R.38, belonged the credit for changing all this. Fundamental research on air resistance, the distribution of the air loads and on the stresses induced in the various parts of the frame were undertaken, and, as a result, a design had been evolved in which the air resistance was less than half that of a ship of the same displacement built to the previous conventional form, while all redundant members were eliminated from the structure. This work was necessarily highly confidential and the first intimation received in Canada was from the advance copies of the documents prepared for the Imperial Conference of 1926.

All the Canadian officers who had the privilege of reading those reports were much impressed, perhaps not so much with the projected designs, which they were not in a position to appreciate, as with the thoroughly scientific manner in which the whole proposition had been developed, and also the fact that at last a type of design had been produced which was calculable in relation to the static stress in all members; also this design permitted the greater and far more important dynamic loads developed during manoeuvring to be predetermined with considerable accuracy.

## Notes on "Civil Aviation"

It was this that inspired confidence, and, with the able exposition at the Conference by the Secretary of State for Air, *led to the notable offer of support by the Prime Minister of Canada*. He said "*the Canadian Government will only too readily co-operate with the British Government ... by immediately taking steps to see that mooring masts to secure the landing places for airships in Canada are erected; also that the work of meteorological organization is commenced forthwith,*" and from that declaration, coming at a time when others hesitated, resulted the continuance of this great experiment and the satisfactory position in the matter which was evident to-day.

In fact, it had been stated by Air Ministry and other officials in London that without that promise of support from Canada, implemented as it had been by the construction of an airship mast at St. Hubert, near Montreal, and by the organization of our Meteorological Service, a matter of the highest importance to air navigation, the work would reluctantly have had to be placed in abeyance. Initial steps for the organization of the required meteorological service in Canada were taken within a few hours following the announcement of our Prime Minister in London, and the St. Hubert mooring mast was erected just as quickly as designs could be got out and the material fabricated.

Thus Canada had a particular interest and pride in the achievements of these new ships, and all were deeply indebted to Group-Captain Stedman for placing the facts before Canadian engineers so that the final stages of the experiment could be followed with intense interest in the results used to guide our future development.

J. A. Wilson, a.m.e.i.c.\* ^ ^ ^

Mr. Wilson had listened with a great deal of interest to Group-Captain Stedman's paper and the discussion contributed by General McNaughton. Following the decision of Canada to participate in the *experiment of developing airships for inter-Empire communications*. Major Scott, who had commanded the R.34 on her trans-Atlantic flights in 1919, had visited Canada and made a thorough examination of many sites for airship bases from the Atlantic coast to Western Ontario. The location finally chosen was at St. Hubert, near Montreal. Immediate steps were taken to purchase the site and prepare a base for the reception of rigid airships, by the installation of a mooring mast, a hydrogen plant and refuelling facilities.

*The work had been proceeding steadily for the past two years, and the engineering work has been in charge of members of The Engineering Institute of Canada in Ottawa and in Montreal.* He desired to place on record his appreciation of the assistance rendered by the members of the staff of the chief engineer. Department of Public Works, on this novel project. They had had most valuable assistance from the Air Ministry, who had placed freely at their disposal the experience gained, not only in Great Britain, but in other parts of the Empire. The United States Navy Department had also been most generous in contributing valuable information.

With the benefit of all this experience they had tried to incorporate the best features from each country, so that the installation at St. Hubert was probably the most advanced of its kind in the world. The whole work was practically complete and they were now looking forward to the first visit to Canada of the R.100 in May of this year.

The trials of the R.100 and R.101 had confounded their critics. Previous to their launching, there had been a great deal of adverse criticism, but the results of the two ships' experimental flights had shown that they had come fully up to their specifications and the expectations of their designers. There was every reason for confidence that the whole venture would be an unqualified success.

It should be kept in mind that these two ships were not designed for passenger carrying on the trans-Atlantic route. The intention of the British Government in building them was to construct two experimental ships to fly to Egypt and India, in which would be incorporated all the fruits of the patient and careful research carried out before they were built. The results of their trials had shown that they are a great advance over any rigid airships ever constructed. Their success indicated the wonderful future which lies in the development of rigid airship construction.

Another gratifying feature was that we had our own men now under training during the trials of the two ships. The reports received from them had been more than satisfactory. One of our officers accompanied R.100 on a 53 hour trip recently made, under most adverse weather conditions, with fog and storm. The ship returned safely to her base, after a trying journey, in good condition, and her crew showed no sign of distress after their experience. Mr. Wilson was of opinion that a great stride had already been made towards the solution of trans-Atlantic flying by airship.

Major-Gen. J. H. MacBrien (President, Aviation League of Canada.)

General MacBrien enquired whether any advance had been made in dealing with ice formation on the covers of airships, and had provision been made for travelling in tropical climates. Further was there any hope of these ships being equipped with

## Notes on "Civil Aviation"

Diesel engines ? The author had dealt with the design and construction of rigid airships in a most informative and interesting way.

J. H. Parkin, m.e.i.c. (Asst. Director in Division of Pure and Applied Physics, in charge of Aeronautical Research, Ottawa, Ont.) Mr. Parkin observed that up to the present time Canadians had had very little experience with regard to airships, and in view of the coming visit of R.100 to Canada this paper had been timely and would serve as a preparation for more intimate contact with aircraft of this type. One part of the paper which had impressed him was that relating to the design of the transverse frames used in the construction of these two modern ships, the R.100

\*\*\* Flight Lieutenant Allan Ferrier, a.m.e.i.c, r.c.a.f. Aeronautical Engineer for Research, Dept. of National Defence, Ottawa. \*\*\*

### 14 February 1930 : The St. Hubert Airship Mooring Tower

R. de B. Corrirenu, M.E.I.C.,

Assistant Chief Engineer, Department of Public Works, Ottawa.

Paper presented at the Annual General Meeting of The Engineering Institute of Canada, at Ottawa, Ont., February 14th, 1930.

Canada's share in airship development, determined at the Imperial Conference, was to provide, as one of the overseas terminals, a mooring tower. The Montreal airport, at St. Hubert, on this side of the Atlantic, selected in 1927 by representatives of the Air Ministry and the Department of National Defence, was placed under the jurisdiction of the Department of Public Works for construction purposes.

The airport, 615 acres in area, is a triangular plot, 90 feet above sea level, bounded by the Canadian National Railway, the Chambly highway and La Savane road, situated on the south shore of the St. Lawrence, seven miles from Montreal, in open country, free from smoke and other flying hazards. The Canadian National Railway and the Victoria bridge, with the new South Shore bridge and improved highways, provide connecting routes with the city.

Provision has been made for railway siding, water, electric power, telephone, hydrogen gas and gasoline fuel supply service to airships and aeroplanes. The Department of National Defence has established radio, wireless and meteorological services.

Airships are built and housed in huge hangars. Several hundred men have to be kept on duty to walk the airship in and out of the hangar in favourable weather. This can be arranged at military bases only. The British were the first to develop the mooring tower, and the mast

—

so called—at Cardington is the type of structure which the Air Ministry desired to have duplicated in this country. Following the visit of Major G. H. Scott of the Airship Development Directorate, and Mr. A. R. Gibbs of the Directorate of Works and Buildings, we were supplied with complete plans of the Cardington mast, and the Air Ministry in co-operation with Messrs. Babcock and Wilcox, of London, further improved the design of the mooring head, which was later fabricated in England and shipped here for erection.

In adapting the plans for the steel structure, slightly

## Notes on "Civil Aviation"

heavier sections had to be used and certain changes were made to meet conditions in this country. [...] In carrying out the construction of the mooring tower and providing the services connected therewith, the Department of Public Works had the active co-operation of the Department of National Defence through Mr. J. A. Wilson, A.M.E.I.C., controller of civil aviation, and Group Captain E. W. Stedman, m.e.i.c, chief aeronautical engineer. Through the Department of National Defence, also, the necessary funds were provided, and consultation was had with the Air Ministry. Messrs. Babcock and Wilcox were represented by Mr. F. E. Williams, of their staff, on the erection of the mooring head by Canadian Vickers Limited.

1930 : Coastal Airways, BC operates Bellanca CH-300 Pacemaker CF-AND w/ 300 HP Wright Whirlwind engine.

1930 : UK Air Ministry requires "approved design firms" to guarantee the arithmetical accuracy of their calculations.RCN

1930 : Frank Whittle, Royal Air Force (RAF) engineer officer, turbojet engine, taking out a patent on his design in 1930.

01 January 1930 : Hugh Trenchard officially resigns as as Chief of Air Staff

early 1930s: Canadian Government's Civil Air Service operation reduced almost to a standstill due to the depression.

01 March 1930 : William "Bill" George Barker,V.C. (March of 1919 by King George V.), D.S.O., M.C., D.F.C. killed in air crash while test-flying new aircraft type at Uplands.

March 1930 : Engineering Journal : THE JOURNAL OF THE ENGINEERING INSTITUTE OF CANADA  
Published monthly at 2050 Mansfield Street, Montreal, by The Engineering Institute of Canada, Incorporated in 1887 as The Canadian Society of CIWI Engineers.  
Entered at the Post Office, Montreal, as Second Class Matter.  
The Institute as a body is not responsible either for the statements made or for the opinions expressed in the following pages.  
Volume XIII Montreal, March 1930 Number 3

Radio Communication as An Aid to Aviation in Canada  
Major W. Arthur Steel, M.C., A.M.E.I.C.,  
The Royal Canadian Corps of Signals.  
Paper presented before the Annual General Meeting of The Engineering Institute of Canada, Ottawa, Ont.,  
February 13th, 1930.

### Canadian Air Mail System

The Canadian Transcontinental Air Mail system, upon which the Government is estabhshing complete aids to navigation, is laid out as follows. In summer the mail is taken from the steamers at Rimouski and transferred to aeroplanes flying to Montreal via Quebec and the St. Lawrence river. In winter the mail is picked up at Saint John, N.B., and taken by plane to Moncton where it is transferred to the transcontinental planes of Canadian Airways Ltd.

It is then flown to Quebec via Fredericton, Edmundston and Riviere du Loup. At Quebec it is transferred to the Montreal plane and delivered to St. Hubert aerodrome. From St. Hubert the mail goes via Toronto and London to Windsor and Detroit, at which point it is handed over to the United States Transcontinental Air Mail Service which takes it as far as Minneapolis.

Here it is again transferred to Canadian machines which take it to Stephenson field, Winnipeg.  
From Winnipeg the Western Canada Airways operate air mail planes to Calgary via Regina, Moose Jaw and Medicine Hat.

## Notes on "Civil Aviation"

At Calgary it is transferred to fast express trains for the trip through the mountains to Vancouver. In addition to this service there is an air mail route from Regina to Edmonton via Saskatoon and North Battleford. This circuit is operated in connection with the direct Winnipeg-Calgary route. It has not yet been decided which air route will be followed through the Rockies to Vancouver and, therefore, the final selection of the main transcontinental route cannot be made.

However, radio aids to air navigation are being installed on two sections of the system, namely, from Montreal to Windsor, and from Winnipeg to Calgary and Edmonton. [...] *The general policy of the Department, with regard to communication for our fighting aircraft, is to follow the lead given by the Air Ministry in Great Britain.*

Northern Explorations : "It should also be mentioned that modern pilots are usually first class aircraft mechanics and the mechanic in the plane is more an assistant to the pilot than an air engineer"

The Aeronautical Laboratories of the National  
Research Council of Canada

J. E. Parkin, M.E., F.R.Ae.S., M.E.I.C.,

Assistant Director in the Division of Pure and Applied Physics, in charge of Aeronautical Research, Ottawa.

Paper presented at the Annual General Meeting of The Engineering Institute of Canada, at Ottawa,

February 13th, 1930

The dependence of *national development and progress on transportation* is nowhere more marked than in Canada. The settlement and development of the Dominion first followed the natural *waterways*, later the *railways*, and may now be said to be following the *airways*.

Regions formerly regarded as inaccessible and doomed to remain forever undeveloped are now not only being explored but are actually in process of development practically wholly by means of aircraft. [...] To make fullest use of aircraft in the country, machines suited to Canadian requirements and conditions must be developed.

In developing aircraft suited to the special services and peculiar conditions, an aeronautical laboratory is essential. Recognizing this fact and *the national importance of aviation in Canada*, the National Research Council has undertaken, with the approval of *the Sub-committee of the Privy Council on Scientific and Industrial Research*, the establishment at Ottawa of completely equipped aeronautical laboratories. The laboratories planned will compare favourably in extent and capacity with the best in other countries.

### Scope and Nature of the Work of the Laboratories

While the whole field of aeronautical research embraces most branches of engineering activity as well as many other sciences, the three principal divisions are aerodynamics, hydrodynamics and power plant. Accordingly, the National Research Council is installing a wind tunnel for aerodynamic research, a test tank for the study of problems connected with floats and hulls and power plant equipment for the testing of aircraft engines, fuels, etc. [...]

### Power Plant Equipment - Airworthiness

*There are now, in Canada, three firms assembling aircraft engines* primarily to supply the Canadian demand, but already Canadian assembled engines are being exported.

*Under Air Regulations 1920, the Dominion Government is required* to carry out tests to establish the airworthiness of aircraft engines for export.

(ergo - *Under Air Regulations 1920, the Dominion Government is required* to carry out tests to establish the airworthiness of aircraft for export.)

### At the present time, there is no equipment in the country for this purpose.

The testing of engines for this purpose is very properly a function of the National Research Council and the Council is accordingly installing equipment for the performance testing of aircraft engines. The equipment, due to its flexibility and range will enable much research work to be carried on in connection with internal combustion engines. Being the only equipment of its type and size in the country, investigations of a character not otherwise possible may be made"

23 June 1930 : Interlake Airways Fokker Universal CF-ABL : Crashes while trying to land due to technical problem. Oshawa Ontario.



## Notes on "Civil Aviation"

1930: WCA & Aviation Corporation of Canada merge, forming Canadian Airways. Canadian Airways operate Junkers JU52 type aircraft (CF-ARM), Boeing B-1E flying boat CF-ABA or CF-ABB 'Pintail, Canadian Vickers HS-3L flying boat G-CARO, Canadian Vickers HS-3L flying boat G-CANZ.

1930 : Final year of Canadian built Avro 504N service with the RCAF.

02 June 1930 : Air accident : Western Canada Airways now known as Canadian Airways Ltd : Fokker Universal G-CASE, Allenwater Lake, Ontario. Pilot killed.

August 1930 : the Customs Air Harbour, St. Hubert, Quebec - a particularly busy month, 108 aeroplanes reporting:

1. foreign aeroplanes 43 inwards and 41 outwards.
2. Canadian aeroplanes inwards numbered 11, and outwards 13.
3. During the month 133 pieces of baggage were examined by P. E. Jensen, the Customs officer in charge.
4. Mail bags inwards totalled 555; outwards 189.
5. Passengers inward- were 104; outwards 95.
6. Eight aeroplanes were imported, the value for duty purposes being \$67,271.
7. The total value for duty of aircraft imported at St. Hubert from the opening of the Customs Air Harbour to the end of August was \$532,299.

August 1930 : R100 Airship : J. Fergus Grant (RMC Cadet # 1429) flies from Montreal to Cardington, England, in H.M. Airship, R-100 as aviation and marine correspondent of the Montreal Gazette.<sup>210</sup>

[also contributed an article to the August 1937 number of the Canadian Geographical Journal entitled "North to the Yukon by Air." He at present represents the Journal in the Province of Quebec, and in the number mentioned above there is the following note about him:- "He flew from Edmonton to Whitehorse on July 5th, 1937 when a weekly air mail service, over this route, was inaugurated. As aviation and marine correspondent of the Montreal Gazette for eleven years Mr. Fergus Grant travelled extensively throughout the world, and is familiar with the development of aviation in this country, during that period, particularly. He has flown over various sections of the transcontinental system, and accompanied the first consignment of letters sent by air from Eastern Canada to Calgary on February, 1931: service inaugurated from: Toronto, Detroit, Chicago, St. Paul-Minneapolis, Pembina and Winnipeg.]

1930 : Fleet Aircraft was set up in Canada by Reuben Fleet of the Consolidated Aircraft Corporation to get around import regulations. The Fleet Model 2 was a low powered trainer for the civilian and recreational market. Twelve were manufactured for the Canadian market before being succeeded by the Fleet Type 7. 600 Fleet Type 7's were produced as a military trainer. Total production in North America was 1,250.

23 September 1930 : Western Canada Airways now known as Canadian Airways Ltd : Boeing 40B-4 : CF-AIN : crashes at night in Southesk, Alberta, Pilot : killed, Passengers killed : 2

27 September 1930 : Western Canada Airways now known as Canadian Airways Ltd : Pitcairn PA-6 Mailwing : CF-ACT : overturns and crashes during take-off in Toronto in high wind.

OPAS sells Curtiss HS-2L- to Bermuda ? (required a mile to take off and climbed so slowly that it needed a lake or sea surface of 3 to 5 miles in length to achieve sufficient height to clear trees and hills. Its average speed was about 65 miles per hour (105 km/hr). The H-boat, as it was known, had an ambiguous safety record - it could land in rough water, but if it stalled and went into a spin, it was impossible to pull it out again.)

21 July 1930 : Beverley Shenstone obtains the coveted German soaring "C" badge, the first ever held by a Canadian, at the Wasserkuppe, Rhon Germany. Shenstone meets Geoffrey G.T R Hill and Robert Kronfeld, Dr. Alexander Martin Lippisch. 02 August 1930 Lippisch demonstrates his "Delta" (and "Fafnir") glider to Shenstone.

end 1930 : RCAF was so deeply involved in civil government air operations ( "bush pilots in uniform." ) air force flying time in 1930 was almost equally divided between service flying (13,996 hours) and "civil operations" (13,996 hours).

05 October 1930 : R.101 disaster ends airship design and construction in Britain, two senior members of the Air Ministry - A.I.D are killed.

Sept 1930 - The Canadian public's appetite for spectacular flying in the Arctic, whetted by the MacAlpine search, was gratified

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<sup>210</sup> The RMC Review - DECEMBER, 1937 pg 78



## Notes on "Civil Aviation"

in September, 1930, by a dash to the Magnetic Pole. Until then most people were hardly aware of such a spot and confused it with the geographical North Pole—thirteen hundred miles farther north. The finding of relics of the 33-year-old Andree balloon tragedy at the same time, on White Island, northeast of Spitzbergen, combined to give the Magnetic Pole flight a great deal more publicity than its importance warranted. In a Fokker monoplane abandoned twelve months before on the Arctic coast by the MacAlpine people, and recommissioned at the last minute to replace a damaged plane originally scheduled for the work, Major L. T. Burwash, veteran Government explorer, and myself, with Walter Gilbert as pilot and Stanley Knight as engineer.<sup>211</sup>

14 November 1930 : FLIGHT : Canadian Rail and Air Combine : The Canadian Government issues an Order in Council enabling the Canadian National Railway (CNR) to participate with the Canadian Pacific Railway (CP Rail), the Western Canada Airways, Ltd. (WCA), and the Aviation Corporation of Canada (ACC), in the formation of a large company, to be known as "Canadian Airways, Ltd."

Each railway will subscribe L 50,000 as capital, and it is expected that they will increase their financial holdings later.

The president of Canadian Airways, Ltd is Mr. J. A. Richardson, a Winnipeg financier, and the joint vice-presidents are : Mr. E. W. Beatty representing the Canadian Pacific Railway, and Sir Henry Thornton, representing the Canadian National Railway, The air services will be complementary to the rail services.

11 Nov 1930 : FLIGHT : Control of (British) Aviation :  
COMDR. BELLAIRS, on November 11, asks the Prime Minister:

1. "whether he would appoint a public inquiry, such as was held in the United States of America under the chairmanship of Dr. Dwight Morrow, into the whole question of the Air Force, its military and civil associations, and
2. how our present system compared with the systems in America and Japan, where civil flying was under separate control and military flying was part of the Navy and Army respectively.

Mr. MacDonald responded : The answer is in the negative.

*His Majesty's Government have no intention of departing from the policy of successive Governments with regard to a separate air arm and Air Ministry, or as regards the control of civil aviation.*

In reply to the second part of the question,

*it is the (a) fact that in America and Japan air administration is divided between three separate departments, On the other hand, France and Italy, with the two largest Air Forces in the world, have adopted the British system.*

1930 : St. Hubert, Que.: Flying conditions at the Customs Air Harbour, St. Hubert, Quebec, were very bad during December, in fact they were the worst yet experienced.

Passenger service was not encouraged at any time during the month, and on many days was cancelled entirely.

12 December 1930 : Canadian Colonial Airways Ltd aircraft crashes in the United States on the way to Montreal.

24 December 1930 : Canadian Colonial Airways Ltd aircraft crashes in the United States on the way to Montreal.

These mishaps brought international traffic almost to a standstill. One of the planes lost was a duty-paid aircraft.

31 December 1930 : During the year a total of 370 (372) persons were on record as holding Canadian Air Engineer Licenses"

- a) 241 persons were licensed as "Air Engineer" only.
- b) 131 of these Air Engineers were also licensed as Pilots.
- c) a total of 164 "Unlicensed Engineers" were identified as holding only an "Air Mechanic" certificate.

(Air Annual 1932-33 pg 17, 19, Civil Aviation - Canada)

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<sup>211</sup> Canada moves North..

**CANADIAN AVIATION - 1931**

1931 : Regular bi-weekly scheduled passenger service during the summer season between Germany and South America begins with airship Graf Zeppelin, This service continues until 1937. When it entered commercial service in 1928, Graf Zeppelin became the first commercial passenger transatlantic flight service in the world. Graf Zeppelin was named after the German pioneer of airships, Ferdinand von Zeppelin, who was a count (Graf) in the German nobility. During its operating life, the Graf Zeppelin made 590 flights covering more than 1.7 million kilometers (over 1 million miles). It was designed to be operated by a crew of 36 officers and men. Graf Zeppelin LZ 127 was the longest rigid airship at the time of its completion and was only surpassed by the USS Akron in 1931. It was scrapped to use the metal for fighter plane parts in 1940. First flight 18 September 1928, Retired 18 June 1937, Scrapped March 1940. operated by DELAG - Deutsche Zeppelin-Reederei. Sistership to LZ-126 had been delivered at NAS Lakehurst, New Jersey, in October 1924, where it was commissioned as the USS Los Angeles (ZR-3). The Graf Zeppelin had a total lift capacity of 87,000 kg (192,000 lb) with a usable payload of 15,000 kg (33,000 lb) on a 10,000 km (6,200 mi; 5,400 nmi) flight

1931 : The College of Aeronautical Engineering, Brooklands Aerodrome, Surrey, 1933. Paper Covers. Book Condition: Fair. Foreword is dated 1931. 48 pages; with a frontispiece and 34 plates (39 photos in all); plain grey-blue card covers, with college crest on front; front cover stained, bottom corners dog-eared, and some evidence of damp-staining internally - 2 plates are stuck together, and two others have been separated, with some loss, otherwise good. Full prospectus, including curriculum, of the college, which was based at Brooklands Aerodrome. The photographs depict aspects of the engineering work carried out, as well as the luxurious accommodation offered to student

College of Aeronautical Engineering : Cranfield 1930 :

1931 : Schneider Trophy race at Lee-on-Solent, FRAF light Lieutenant Boothman won at a speed of 340.6 mph in a Supermarine S. 6B.

04 May 1931 : Air Accident : Pays Plat Station, Ontario : Aircraft type - Curtiss HS-2L : Owner - OPAS : Pilot - Earl Hodgson - injured : Passenger - Air Engineer, J.L Mewburn - Killed by drowning. BOI : Pilot mis-judged the aircraft height compared to the obstacle the aircraft struck (telegraph wires beside RR track) and crashed into Lake Superior.

12 March 1931 : Air Accident : Rockcliffe, Ottawa, Fairchild KR-21 trainer: CF-AKR : Fatalities - Pilot : Maj. W.G "Billy" Barker, BOI by J.A Wilson : Pilot used to Camel with greater Hp and performance, trainer aircraft mis-handled, zoomed to 250-300 ft, stalled, tail slid, fell inverted onto it's back crashed immediately after take-off onto the ice of the ottawa river. Aircraft did not burn, was air-worthy. Pilot performed aerobatics at too low an alitude and lost control.

30 March 1931 : US Navy rejection of Fokker F-10A results in US Dept of Commerce - Aeronautics Branch issue notice grounding all US Fokker F-10A aircraft. The US dept of Commerce - Aeronautics Branch investigation into Fokker F10A aircraft type — revealed 1) manufacturer (USA Agent and investor General Motors?? or German OEM??) claimed the wing is safe so long as the plywood skin does not seperate from the wooden spar, 2) maintenance could not be performed on the wing without removing the plywood wing skin.

31 March 1931 : Air Accident : United States : Owner - Transcontinental & Western Air (TWA), Aircraft type - Fokker F-10A : Flight Kansas City - Los Angeles : Metal fuselage, wooden wing : Cause of crash - in flight failure of the wooden wing structure. Fatalities - 8. Pilot - Killed. Notable persons - 1) Knute Rockne, football coach for University of Notre Dame. 2) Jake Lingle - Stool pigen who fingered Al Capone. Upon arrival of accident investigators the day after, only the wings and the engines remained - no attempt to secure the scene, souvenir hunters stripped the aircraft overnight. Not enough remained to allow a detailed investigation, it was assumed that 1) ice formation on a prop hub had flown off and struck a prop - this caused a part of a propeller to come off and strike the wing. 2) the aircraft flew into a severe thinderstorm and the accident was an act of god - no storms were reported in the area. The US Dept of Commerce - Aeronautics Branch commences first detailed technical investigation into an aircraft accident - Findings 1) Cracks developed in the sealed plywood skin. 2) Plywood skin cracks allowed moisture - rain water -to enter the wing. 3) Moisture - water - had softened the plywood, dissolving the glue holding the wing structure together. Conclusion : Dry-Rot, prohibit all F-10A's to be used in passenger service. Anthony Fokker rebutted the finding blaming poor maintenance by the operator. American Airlines and Pan American Airlines removed the engines from their aircraft and burned the airframes. Canada contines to allow Fokker F-10A aircraft to operate, albiet for freight only operations.

## Notes on "Civil Aviation"

17 April 1931 : Flight : Air

Ministry Notices to Airmen have been sub-divided in a new manner, and are to be distributed in a different way than hitherto. In view of this distribution and of the increasing size of these notices, as well as those to Ground Engineers and to the increasing pressure on our space, we shall in future not publish these notices in full, but will summarise each notice as it appears. We feel that by so doing we shall be enabled to keep up to date with these, as issued, and readers will, from these summaries, immediately be able to see which notices interest them particularly, and if desired make application for copies to the Air Ministry.

14th August 1931, Lloyds spelled out their request to the Secretary of State for Air as follows:

1. "Inspection of all civil aircraft for renewal of Certificates of Airworthiness:
  - a. Inspection at Constructor's works of all aircraft and engines:
  - b. Issue of Airworthiness Certificates
2. Approval of Design of civil type aircraft
3. Approval of Design of civil type engines ,
4. inspection during construction:
5. Approval of modifications for civil aircraft:
6. Registration of civil aircraft:
7. Inspection, for foreign orders, of:
  - a. materials
  - b. equipment
  - c. aircraft
  - d. engines
5. Supervision of ground engineers.

According to Lloyds and BAIG, these roles were "devolved wholly from Government" until the Civil Aviation Authority formed in 1972.

September 1931 : September Flight Lieutenant Stainforth took the Supermarine S.6B and its Rolls-Royce engine, now boosted to 2600 hp, to a new speed record of 407.4 mph

June 14 1931 : Air Accident : CF-CAV - Millidgevill NB, - killing Mr. JK Sterling, Pilot, Mr. Rudyard Brayley, passenger. BOI determined Pilot was rough on controls and liked stunting, previously under suspension for 1 offence and fined for a 2nd. was impulsive and arrogant. fully intended to go stunting on the last flight)

15 June 1931 : Canadian Airways Fokker 14A flown from Winnipeg to Moose Jaw using radio beacons - Canada's first radio guided flight.

01 July 1931 : Canada Day Air Pageant - 1st Trans-Cnada Air Pageant : Hamilton Ontario : Aircraft type - Travelair SA-6000 CF-AIB. Pilot - H.M Stirling, Passengers - 4, all killed. BOI held July 9, 1931: Aircraft nose dived within 20 ft of ground, pilot opened throttle and "zoomed". as the aircraft changed altitude a ripple was seen thru the full LE of the RH wing. the fabric tore back in shreds, the aircraft proceeded to climb and turn - rolling to the right, the pilot reduced power to no avail. aircraft fell to ground on left wing. Aircraft was certified pre-flight by an Air Engineer, aircraft had single controls, weather was excellent, Pilot had not done any stunting previous to this flight on that day that would have imposed loads on the structure ( no mention of past records though), Controls were found locked - indicating in flight failure of the RH wing. No apparent evidence of breach of the air regulations. NRC investigation into angle of incidence, strength of the duralumin sheathing and measurement of air pressure distribution over the Travelair wing revealed that the leading edge ribs failed due to an upward load in flight, resulting in the metal leading edge skin becoming unsupported by the front spar tore thru the wing fabric of the right wing - destroying lift.

August 1931 : RCAF Station Trenton officially opens

25 September 1931 : FLIGHT : FLIGHT, SEPTEMBER 25, 1931 pg 970 : W E are indebted to the de Havilland Aircraft Co.,

Ltd., for the following information, gathered from the operational figures for the month of

Juty in respect to the Ontario Provincial Air

In addition to what are termed " Suppression and Transport aircraft," the Ontario Provincial Air Service operates 21 light aircraft, all on floats, of which 14 are " Moths." For purposes of administration, the field of operations is divided into two districts, known respectively as the Eastern District and Western District. In the Eastern District 10 machines are employed, of which eight are " Moths," the other two being HS.2L, while in the Western District six " Moths " are employed, in addition to three HS.2L and two " Hamiltons." During the month of July the Eastern District machines compiled a total of 1,232 hours, 1,061 hours 5 minutes of which were flown by the " Moths." In the Western District the total time was 960 hours 5 minutes, including 520 hours 20 minutes on " Moths."

The report gives details of each day's operations, and the letters NFR (no flying required) appear dotted about. By the frequency of the letters NFR appearing, it seems that there has been much more forestry patrol required in the Eastern District than in the Western District. Including both administrations, the greatest number of flying hours by any one machine was put in by one of the " Moths " operating in Eastern District at Sault Ste. Marie. This " Moth " compiled no less than 202 hours 45 minutes during the month. It flew on every day, the greatest time in a day being 10 hours 25 minutes on the 3rd, and the lowest 1 hour 10 minutes on the 28th. No mechanical trouble whatsoever was experienced with this machine, and it was flown throughout by one pilot. Reckoning flying time for machines in a descending scale, the first eight greatest times were put up by " Moths." The longest time in the air by any one machine in one day was 12 hours' flying, and this was done by the " Moth " with the second highest monthly total (191 hours 5 minutes), operating from the Bisco Base, which also flew on every day.

On the " Suppression and Transport aircraft" side, the air service operates various machines, including a threeyear-old D.H.61 on floats. This machine heads the list for usefulness in this class. During the month of July it made 160 flights, totalling 150 hours 10 minutes ; 51.1 tons of effective- load were carried, as against 37.73 by the next on the list. In addition, 277 passengers were carried, as against 174 by the machine referred to above.

30 September 1931 : FLIGHT [FLIGHT, JANUARY 15, 1932 : Air Transport : CIVIL AVIATION IN CANADA] : for the quarter ending September 30, 1931, issued by the Civil Aviation Branch of the Department of National Defence, Canada, are the following statistics concerning Air Mail services, etc. During the period July 1 to September 30 the licences issued were:—41 private, 39 commercial, and 41 air engineers; 39 aircraft were registered and 4 air ports licensed.

## Notes on “Civil Aviation”

This brings the total in force at September 30, 1931, to : — Private pilots, 271. Commercial pilots, 393. Air engineers, 406. Aircraft, 489. Air ports, 75.

CANADIAN AIR MAIL SERVICES. FROM JULY 1 TO SEPTEMBER 30, 1931					
Operator	Route	Pilots	AC	GE's	
Canadian Airways Ltd. (Eastern Lines)	Montreal—Detroit. .	4	4		
Canadian Airways Ltd. (Western Lines)	Trans—Prairie	12	12		
	Pembina	1	2		
	Mackenzie River	4	5		
	Narrow Lake—Sioux Lookout	2	2		
Canadian Trans-continental Airways Ltd	Montreal—Rimouski	2	2		
Canadian Colonial Airways Ltd.	Montreal—Albany	3	3		

1931 : Trenchard's University Air Squadron procedures had become sufficiently well defined to permit them to be turned into a set of formal regulations via the publication of the first edition of AP1401. University Air Squadron operated RAF aircraft in club guise. The new AP restricted membership to seventy-five per squadron, based on annual intakes of twenty-five for three-year courses. It also specified the content of the Proficiency Certificate. This required attendance at an annual camp, the accumulation of at least fifteen flying hours (three of them solo) and passing examinations in the theory of flight, rigging, engines, airmanship and air pilotage – what we could call navigation. As stated in AP140 stated “ the aims of the UASs were to encourage an interest in flying’, as well as promoting research into technical matters and to ‘assist those who might wish to join the RAF’.

Clearly, therefore, while it was still quite low-key, at least the idea of, recruiting had been tacked onto the agenda by 1931 and from 1937 onwards UAS members were being actively encouraged to join the RAF, the RAFO or the RAFVR, when they went down and a substantial proportion of them did just that. By this time there was a third UAS, London having opened one in 1935, and the standard trainer had become the Avro Tutor. while the stated aim of the wartime UASs was primarily to do with recruiting aircrew and/or providing them with pre-entry training, space was also found for undergraduate entrants who wished to join the Technical or A&SD Branches.

The Oxford and Cambridge squadrons were re-opened in October 1940 with others being established during 1941. In the context of today's seminar, it is probably worth observing that much of the spadework involved in this project was done by a prominent pre-war Auxiliary Air Force officer, Wg Cdr Lord Nigel Douglas-Hamilton who was instrumental in ensuring that there were eventually as many as twenty three wartime UASs the primary purpose of the wartime UASs was to provide pre-entry training for potential aircrew officers. What the wartime UASs specifically did not do, however, was to provide any form of flying training. Most the wartime UASs did own' a solitary Tiger Moth, even the odd Oxford, but these were for the benefit of the staff, not the students. Apart from a general soaking in the university atmosphere, all Short Course students were required to attend a specifically designed series of lectures covering mathematics and mechanics plus a secondary subject chosen from electricity and magnetism, engineering, meteorology or navigation. In practice, a university's ability to offer secondary subjects depended upon the capacity of its academic staff and a student's 'choice' could be limited, at Manchester, Edinburgh and Aberdeen, for instance, to Met. Beyond that, the aim of the game was to obtain a UAS Proficiency Certificate. This now covered mathematics, navigation, drill, physical training, signals, anti-gas procedures, armament, air force law, discipline, admin and org, hygiene, sanitation, aircraft recognition, general studies and the Link Trainer. In other words, the subjects

## Notes on "Civil Aviation"

covered by the ITW syllabus. UAS members wore the uniform of RAF airmen, these were embellished with ATC buttons and cap badges, not those of the RAF. This came about as a result of a major reappraisal of all aspects of pre-entry training in late 1940. The ATC was formally established by a Royal Warrant of 4 February 1941 which left no doubt as to the constitutional position of the

wartime UASs. It stated that 'there shall be established a Corps to be called the Air Training Corps' and that the Corps 'shall comprise squadrons formed at universities and university colleges to be known as university air squadrons.' In January 1931 (and again in January 1935) AP 1401 had stated that: 'The object of the University Air Squadrons generally is to encourage an interest in flying and to promote and maintain a liaison with the Universities in technical and research problems affecting aviation.'

The 1947 edition said that the 'purpose of University Air Squadrons is to provide training during their university career for members of the universities who wish to prepare themselves for commissioned service in the General Duties branch and the Technical branch of the regular or non-regular air forces...' Clearly, there had been a major shift in emphasis. Before the war the UASs had been about 'air mindedness'. Now they were about officer recruiting. In fact some 60% of the RAF's pilots now join via the UASs. As in 1947, all are still enlisted into the RAFVR, technically as airmen, but with the status of officer cadets, with a heavy emphasis being placed on the 'officer' aspect. The Technical Officer supervised all engineering matters on the squadron and station, assisted by auxiliary engineering and armaments specialists. Our establishment of some fifty RAF tradesmen provided essential continuity, covering the second line engineering task and training support. Manchester University Air Squadron. Last, but certainly not least, was our Honorary Air Commodore, Sir Roy Dobson CBE, the Chairman and Managing Director of Avro and a prominent figure in the Manchester scene. His approach was very much 'hands on' and he gave tremendous encouragement to the squadron as well as practical support. executives were invited to view and to participate in teamwork training, and much stress was placed on the benefits of leadership, teamwork, new technical skills and even first aid training which reservist employees brought back to their civilian workplace. During 1954/55 I was Chief Flying Instructor at Cambridge University Air Squadron. We were established for eleven Chipmunks and four Harvards to provide training for 100 pilots and, uniquely, two Ansons to cater for twenty navigators. In addition, there was a reserve commitment for members who had qualified as fighter controllers during their national service and, for training up to PFB standard, we had a number of technical cadets who, having completed their first year at Henlow, were reading for their engineering degrees. That they achieved their flying qualification was amply shown when they put up a four- Chipmunk formation over the West Country hamlet where one of their number was being married

1931 : Imperial Airways first mail flight from England en-route to Australia crashes in Timor.

- A. There are no way-points,
- B. There are no established times.
- C. The crew were left stranded.

1931 : Imperial Airways chairman Sir Eric Geddes writes the discussion paper, 'The Future of Civil Air Communications of the Empire'.

Geddes paper

- A. compromised aviation's competitive advantage of "Speed" against other transport forms.??
- B. Larger aircraft might carry the bigger volumes.
- C. Larger aircraft carry the bigger volumes more slowly.
- D. much bigger loads would 'enable the use of larger and therefore more economical aircraft.
- E. much bigger loads would 'spread the cost of the Company's comparatively large ground organisation over the greater volume of business and thus reduce the total cost per ton /mile.
- F. Geddes planning assumed a cruising speed of 186 km h (115 m.p.h.).
- G. The large Imperial Airways aircraft (may have been aircraft) of 1918 vintage or design
- H. Modern designs by non British manufacturers (not restricted by government) saw operating speeds of upwards of 322 kmh (200 m.p.h.)

January 1934 : Imperial Airways proposes that the airline should lift the empire's first-class mail by air. This discussion paper takes Geddes's general ideas into a more specific areas

- A. This was calculated to involve 1,676 tonnes (1,650 tons) per annum outbound from England, and 965 tonnes inbound (950 tons) to England.
- B. the largest single mail despatch was to and from Canada (which was not a viable destination for an air service)
- C. Imperial Airways calculated that only 5–10 per cent of the existing first-class market would stand a surcharge: if such a fee were
- D. applied,
- E. the outbound mail load to Africa would come to one ton;

## Notes on "Civil Aviation"

F. the outbound mail load to Australia would come to barely three-quarters of a ton.

October 1934 : British government unveils Empire Air Mail Scheme" (EAMS) in a 'Blue Paper'.

- A. all major operational decisions for EAMS have been made and imposed.
- B. raised the proposed operating speeds to 144 m.p.h.
- C. the various governments of the empire are expected to contribute to EAMS for 15 years.
- D. the various governments of the empire are expected to come up with a combined £287,000 per annum.
- E. governments throughout the empire are obliged to meet the costs of the ground organisation for EAMS,
- F. governments throughout the empire are obliged to subsidise it by waiving local taxes and charges.

govt of australia commissioned their own service QANTAS Empire Airways (QEA) to Singapore in late 1934, using de Havilland DH 86 biplanes. The DH 86 services from and within Australia were littered with fatal crashes, the cause of which the Australians had to solve because of British official insistence that there was nothing wrong with the machine. In an extraordinary approach to the operation of high-technology transport, the Air Ministry suggested that Australian conditions were to blame for the problems afflicting the DH 86, rather than the design itself.

29 September 1933 : NEW WORLD ALTITUDE RECORD of 44,819 feet / 13,661 metres is set using a POTEZ 50 B I P L A N E powered by an 800—1,000 H.P. GNOME - RHONE "MISTRAL-MAJOR" static radial engine supplied by Societe des Moteurs Gnome et Rhone 34, Rue de Lisbonne, Paris 8m



FOR THE BYRD ANTARCTIC EXPEDITION : The Curtiss-Wright "Condor," in which Admiral Richard E. Byrd will fly over the South Pole, flying over New York City. It is powered by two 700 h.p. Wright "Cyclone" engines, has a top speed of 170 miles an hour and a landing speed of 45 miles per hour.

'Safety Last" - FLIGHT, OCTOBER 26, 1933

AN interesting difference in the point of view of the Americans and the English, and one which accounts for difference in the way in which the transport aros of the two countries have developed, was given (" he other day. A well-known American pilot, ho has 1 considerable experience of transport work, said that ms country it was impossible to sell safety. People would willingly pay more



if there was the possibility of being able to boast afterwards that they had done journey in a few minutes less than their friends. That » why American operators do not mind sacrificing many PC'inds of pay-load if, by doing so, they can secure a 1 if more speed. Over here it is different. People who ravel by air set a higher value on comfort and safety they do on speed, and although the service must, of th-it\* be f a s t e r t n a n Y other form of transport, yet satv, tor undoubtedly takes second place to those of ' and comfort. The result has been Imperial Airways policy of providing aeroplanes with a larger payload than that of foreign aeroplanes, and also with much greater comfort. No one who has flown in the cabin of one of their H.P. 42-seaters, a cabin which is quieter than the coach of the ordinary express train, can deny that it is the most comfortable way of travelling, and one which is gaining new adherents by the hundred every week.



Nick Comper was one of Britain's most brilliant and influential aeronautical engineers of the early 1930s. He is best known for the design and manufacture of the Comper Swift light aircraft. The Swift enjoyed considerable success in the many flying competitions of the era, most notably the Kings Cup air race. In 1931 the plane broke the world record time for a flight from the UK to Australia. The aircraft was exported all over the world and several of them survive to the present day. Comper is regarded as one of the country's pioneers in the development of commercial light aircraft. - Born in April 1897 he was the son of the celebrated church architect, Sir Ninian Comper and grandson of John Comper, a highly prominent clergyman in the Scottish Episcopal Church. Nick was brought up with his five brothers and sisters in Beulah Hill, Upper Norwood in London. He was educated at Dulwich College, where he was a pupil from September 1911 until July 1914. At the outbreak of the first World War, Comper, at the age of seventeen, joined the aircraft manufacturer, de Havilland, to study aeronautics. He was working as a draughtsman for The Aircraft Manufacturing Company, who built Henry and Maurice Farman's airplanes and seaplanes in Hendon in London, when he was released by them to sign up with the Royal Flying Corps in April 1916 as a second lieutenant, special reserve. As a pilot he was stationed in France and there he undertook dangerous reconnaissance missions throughout the rest of the war. He left behind him a record of events in a series of letters written to his mother. After the war he remained in what in 1918 had become the RAF. In 1920 he spent a year at Jesus College, Cambridge University, reading aerodynamics.

From there he was stationed at Felixstowe to study and fly seaplanes and flying boats, then came the assignment as an engineering instructor at the Cranwell Academy, training cadets at the engineering laboratory.

One of his pupils there was Frank Whittle, the inventor of the jet engine. - While at Cranwell he and some staff and pupils formed the Cranwell Light Aeroplane Club (in 1923) and they produced four aircraft in what they named the CLA class (Cranwell Light Aeroplane). One of them, a so-called parasol monoplane, won the International reliability trials at Lympne near Folkestone and the following year in the plane's successor, the CLA-3, was second overall in the speed trials at the same event.

By then it had become evident that to pursue his gifts as an aeronautical engineer he would need to leave the RAF and enter the business world. - In March 1929 when Comper left the Royal Air Force he formed the Comper Aircraft Company and set up a manufacturing plant to build the Comper Swift, an aircraft he had designed and whose origins were in the work he's done at Cranwell.

The plant was based at Hooton Aerodrome in Cheshire.

The Prototype Swift (registered G-AARX) first made a public showing at Brooklands on 17 May 1930.

The aircraft was a small but graceful single-seat braced high-wing monoplane of wooden construction and was powered by a 40 hp (30 kW) A.B.C Scorpion piston engine.

After successful tests, seven more aircraft were built in 1930 powered by a 50 hp Salmson A.D.9 radial engine.

Trials with Pobjoy P radial engine for use in air racing resulted in all the subsequent aircraft being powered by the Pobjoy R.



## Notes on "Civil Aviation"

The last three aircraft (sometimes called the Gipsy Swift) were fitted with de Havilland Gipsy engines - two with 120 hp (89 kW) Gipsy Major III and one with a 130hp (97 kW) Gipsy Major.

Postwar, the surviving Comper "Swifts" continued to compete successfully in UK air races into the mid 1950's.

In fact, probably no other aircraft built in such small numbers has ever broken so many records and won so many prizes. Amongst these achievements one of the most outstanding was Charles Butler's record 9 days 2 hours.

"Licensing" Statistics for 1931:

Nation	Great Britain	Australia	Canada	New Zealand	South Africa	India	Total
<b>Aircraft</b>	924	204	495	63	56	65	1807
<b>Aerodromes and Air Ports</b>	57	82	83	15	39	20	296
<b>Pilots</b>	2091	601	658	255	112	214	3931
<b>Pilot "A" Lic.</b>		387		227	79	189	
<b>Pilot "B" Lic</b>		214		28	33	25	
<b>Navigators</b>							
<b>Civil Aviation Engineers</b>	1156	309	370		30	18	1883
<b>Civil Aviation - Ground Engineers</b>							

1931 : The Aeronautics Case : Canada - Supreme Court of Canada - Aerial Navigation

The following questions are submitted to the Supreme Court of Canada for a "decision"

1. Has the Parliament of Canada "Exclusive" legislative and executive authority for "*performing the obligations of Canada, or any provinces thereof, under the convention relating to the Regulation of Aerial Navigation*" ? (ICAN).
2. Is the legislation of the Parliament of Canada providing, generally, for the regulation and control of flying, including flying operations carried on entirely within a province, necessary and proper for performing the obligations of Canada, or any province thereof, under the *under the convention relating to the Regulation of Aerial Navigation*?
3. Has the Parliament of Canada legislative authority to enact the provisions of Section 4 of the Aeronautics Act?
4. Has the Parliament of Canada legislative authority to enact and enforce certain regulations regarding personnel, aircraft and aerodromes?

Initially, the Supreme Court in its' opinion, held:

1. generally that:
  1. the land in, and the air over provinces,
  2. aircraft, and the use thereof on land and in the air,
 came primarily within provincial powers of legislation,
   
**BUT**

## Notes on "Civil Aviation"

2. that the Parliament of Canada had legislative power when aeronautics were used in connection with, and for, Dominion purposes such as:
  1. Defence,
  2. Postal service and also, in so far as necessary,
  3. to carry out Canada's treaty obligations.

The initial opinion of the Supreme Court was appealed (by the Air Board) to the Judicial Committee of the Privy Council.

As a Dominion of the British Empire, the Judicial Committee of the Canadian Privy Council was the final court of appeal in Canada. The Committee was a tribunal of senior English (British Empire) judges which advised the Privy Council on matters of law and they had the final say.

The right of appeal from the Supreme Court of Canada to the Privy Council was abolished in 1949 at which time the Supreme Court of Canada became the highest court in Canada.<sup>212</sup>

***The Privy Council reversed the decision of the Supreme Court*** on October 27, 1931 .

The Privy Council found that "***It was competent for the Parliament of Canada to pass the Act and authorise the Regulations in question, and that questions 1, 3 and 4 should be answered in the "Affirmative".***

31 December 1931 : During the year a total of 346 (370) persons were on record as holding Canadian Air Engineer Licenses"

- a) 236 persons were licensed as "Air Engineer" only.
- b) 134 of the Air Engineers were also licensed as Pilots.
- c) a total of 131 "Unlicensed Engineers" were identified as holding only an "Air Mechanic" certificate.

(Air Annual 1932-33 pg 17, 19, Civil Aviation - Canada)

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<sup>212</sup> [https://www.irwinlaw.com/cold/judicial\\_committee\\_of\\_the\\_privy\\_council\\_jcpc](https://www.irwinlaw.com/cold/judicial_committee_of_the_privy_council_jcpc) The Charter of Rights and Freedoms , Robert J. Sharpe and Kent Roach

CANADIAN AVIATION - 1932

January 1932 : FLIGHT : No. 1203. (Vol. XXIV. No. 3.) JANUARY 15, 1932:

A SECOND step towards the elimination of the short-service officer in the Royal Air Force has been taken. Not long ago the maximum age for acceptance as a short-service officer was reduced from 25 to 22 years of age.

It is now announced that the period of service " with the colours " ( as the Army has it ) is to be lengthened **from five to six years**. At the same time the lowest permissible age is now 18.

This new scheme is to be corn- Longer mended. The Service gains by getting Commissions m o r e tying out of an officer after it has gone to the trouble and expense of teaching him to fly and training him in all the duties of an officer. A year is allowed for this process, and during this year the officer will rank as Acting Pilot Officer on a standard rate of pay of 13s. a day (lis. 6d. p.d. at current rates), but at the end of 12 months' approved service he will be promoted to Pilot Officer and paid at a standard rate of 16s. a day (14s. 2d. at current rates).

The Service will then get five years of useful work out of him before he is transferred to the Reserve, instead of four years as under the previous scheme. As the officers will be kept longer, fewer recruits for short-service commissions will be required, and consequently fewer men will have to face the arduous prospect of obtaining civil employment when the time comes for them to transfer to the Reserve. As they may now start their service career at the age of 18, the average age of those who have to seek civil employment at that time will not be higher than it used to be, and may even be lower. At the same time, as there will be fewer short-service officers, a somewhat greater percentage of them will be able to obtain permanent commissions, and so find their career for life in the Royal Air Force.

The gratuity to be paid at the end of the six years' service has been raised from £375 to £500, which makes a nice little capital for a man who is starting his real career at the age of perhaps not more than 24. He may even sometimes be in better case than a University man who takes his degree at 22, but to whom no such gratuity is assured. It is rather interesting to compare the probable prospects of a young man who has to decide between four years at a University and six years in the Royal Air Force. Let us suppose that he has been educated at a public school. There has been much interesting discussion in the Press lately about the prospects of a public school boy (with or without a University degree) who enters on a business career.

The weight of argument and experience has gone to show that, though such a man does not start as a well-trained clerk, his general educational training hits him to rise to high posts in the world of commerce.

The young man who decides on six years in the Royal Air Force misses the additional training in general education which a University offers, but, on the other hand, he gains a specialist training in a mechanical subject in addition to a certain kind of training in businesslike ways. This is a mechanical age, and on the face of it a man with a good knowledge of internal-combustion engines should start with an advantage. Still, this knowledge is only a limited recommendation. At the moment the ability to fly helps only a very few men. In the future flying may be considered as generally desirable an accomplishment as riding was in pre-Victorian days; but that time is not yet. The R.A.F. reservist must rely for his bread and butter on his mechanical training rather than on his flying abilities. His other accomplishment is some knowledge of accounting and writing business letters, as those arts are practised in the fighting Services.

The business world despises Service methods; but, none the less, many an officer on demobilisation in 1919 found that his Army training did make a useful introduction to business methods. Finally, the R.A.F. reservist has £500 in his pocket, while the young graduate may have next to nothing. The experience of the R.A.F. Officers' Employment Association has been that employment can be found for most R.A.F. reservists. We doubt if this would be the case if the numbers of the reservists were as great as the numbers of men coming down each year from the Universities. The majority of the latter do not drift at once to the workhouse. They mostly find employment. Obviously, the University course opens up more opportunities.

We have not forgotten the fact that some men cannot afford a University, which means three or four years of spending; while the Royal Air Force means six 3'ears of earning, with £500 at the end. But the latter may be a dead end. The case we were considering was naturally that of a man who had an open choice. In that case the £500 stands in the same relation to the University degree as golden eggs stand to the goose which can lay them. It is obviously better to own such a goose than to be presented with some of the eggs. In fact, we consider the acceptance of a short-service commission as a very hazardous speculation for a young man who has to earn his living. This latest scheme of the Air Ministry is good because it has somewhat improved the prospects offered to the short-service officer, and also because it means more pilots of experience in the Royal Air Force, but chiefly because it still further reduces the number of men who will receive short-service commissions.

## Notes on "Civil Aviation"

January 1932 : FLIGHT : CANADIAN FLYING CLUBS Very satisfactory progress has, on the whole, been made by the Canadian flying clubs during the past year . An interesting summary of their activities for the period January 1 to September 30 of last year will be found in the accompanying table, recently issued by the Civil Aviation Branch of the Department of National Defence, Canada

CANADIAN LIGHT AEROPLANE CLUBS SUMMARY FOR NINE MONTHS ENDING SEPTEMBER 30, 1931 - FLIGHT, JANUARY 15, 1932							
Club	Members	A/C	Students	Soloists	Hours Flown	Licences obtained	
						Private	Commercial
Aero Club of B.C.	84	3	22	13	425-55	6	7
Brandon Aero Club	226	2	26	9	31118	6	2
Brant and Norfolk Aero Club	150	2	31	5	220-00	5	1
Border Cities Aero Club	130	3	25	14	513-55	12	5
Cape Breton Aero Club	37	2	5	8	244-30	4	1
Calgary Aero Club	128	5	30	0	0	31	1
Edmonton and N. Alta	132	4	4	25	1,040-35	59	5
Fort William Aero Club	180	2	10	2	192-45	19	8
Halifax Aero Club	110	4	44	10	445-45	6	3
Hamilton Aero Club	118	2	5	40	396-30	19	10
Kingston Flying Club	68	2	10	19	454-30	10	3
Kitchener Waterloo Aero Club	75	4	32	6	200-00	4	2
London Flying Club	184	1	5	6	336-00	17	6
McGill Light Aeroplane Club	30	5	30	2	27-35	0	0
Montreal Light Aero Club	170	3	18	65	1,024-20	44	11
Moose Jaw Flying Club	145	4	18	15	283-20	35	11
Ottawa Flying Club	143	4	48	21	200-00	34	17
Regina Flying Club	93	3	26	50	387-30	32	16
Saskatoon Aero Club	44	2	43	46	404-13	38	6
St. John Flying Club	71	2	16	17	150-00	9	1
St. Catharine's Flying Club	54	5	28	35	330-05	18	6

## Notes on "Civil Aviation"

CANADIAN LIGHT AEROPLANE CLUBS SUMMARY FOR NINE MONTHS ENDING SEPTEMBER 30, 1931 - FLIGHT, JANUARY 15, 1932							
Toronto Flying Club	318	3	22	33	860•55	34	22
Winnipeg Flying Club	181	3	22	22	425-55	53	14

15 January 1932 : FLIGHT : CORRESPONDENCE TUITION

""THOSE who intend to take a correspondence course in any branch of aeronautics should know in the case of the Technological Institute of Great Britain that its courses are based upon standard text-books written by accepted authorities in the aeronautical world. The subject is conveniently divided into a series of courses to suit students who wish to improve their knowledge in a particular direction, or, alternatively, cover the entire subject. All the necessary text-books are provided by the Institute without additional charges to the fees quoted for the courses, and they become the student's property. The address of this Institute is Temple Bar House, Fleet Street, London, E.C.4.

15 January 1932 : FLIGHT : DE HAVILLAND PROGRESS

THE ELEVENTH Annual General Meeting of the De Havilland Aircraft Co., Ltd., was held on December 31 at Stag Lane Aerodrome, Edgware. Mr. A. S. Butler, Chairman of the Company presided. He said that in spite of the unprecedented world depression the profit, before allowing for income tax, for the existing year was only £2,632 less than last year. Although the volume of business, he said, had been reduced by 10 per cent., the profits were reduced by only 6 per cent., the difference being made possible by careful economy in all departments and a reduction of 33-1/2 of the Director's fees. The bank account this year showed a credit of £37,497 instead of a debit of £32,588.

1932 : Canada issues regulations requiring Canadian aircraft to be fitted with landing lights or flares.

20 January 1932 : The first regular through air mail service between England and Cape Town started. A comfortable if sedate type, the H.P.42 operated reliably through the Sudan for five years, 1932-37

1932 : Chris "Limey" Green, mechanic to Grant McConachie (Fokker type) .

18/19 August 1932: First East -West Solo crossing of the Atlantic. deHavilland 80A "Puss Moth" G-ABXY from Portmarnock Ireland to Pennfield Ridge, NB, Canada.

1932 : Manitoba Government Air Service formed using Vickers Vedette and ex RCAF staff.

1932 : Air Ministry publication HP806 was revised and enlarged, published as A.P.970, bible of the designer of "Service" aircraft for a long time. Dr. Roxbee Cox - Flight March 1939 page 227)

By 1932, however, the differences between civil and military aircraft became recognised and a separate handbook for civil aircraft, known everywhere as A.P.1208, was produced. ( Flight - March 1939 page 227 - Airworthiness and the ARB)

1932 : Air Ministry publication HP806 / A.P.970, bible of the designer of "Service" aircraft for a long time. Dr. Roxbee Cox - Flight March 1939 page 227)

1932 : The differences between civil and service aircraft were recognised. UK Air Ministry publishes A.P.1208, Handbook for civil aircraft Airworthiness" .( Flight - March 1939 page 227 - Airworthiness and the ARB)

## Notes on "Civil Aviation"

November 1932 : Imperial Airways introduce the Handley Page H.P.42E G-AAGX "Hannibal" on their Cairo-Cape Town route.

1932 : DH Fox Moth designed in England as a light, economic transport, DH Fox Moth was built using as many Tiger Moth components as possible.

53 Fox Moths were produced in Canada after the Second World War mainly to keep the Canadian DH plant in production, but also to satisfy the increasing need for new bush aircraft.

All the Canadian modifications made to the Tiger Moth applied to the Fox Moth.

39 Fox Moths built in and remained in Canada, most of which were operated in float/ski configuration, and gave years of satisfactory service. The Fox Moth, though efficient, was a bit of an anachronism. A modern, moulded- plexiglas sliding cockpit-hood was attached to what was essentially a 1932 aircraft. Communication between the cockpit (located behind) and the passenger cabin was through a hole in the instrument panel. De Havilland designed a special stretcher for the Fox Moth, allowing the Fox Moth to operate as an air ambulance.

January 1932 : Ernest L. Janney was still selling himself as a businessman and aviation pioneer;

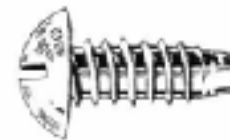
A. a Montreal newspaper described him as the "first Canadian to volunteer his services and be accepted as a war flier."

B. He then dropped from sight.

04 February 1932 : The Committee on Engineering Education meeting with university delegates at Toronto's Royal York Hotel.

1932 : Canadian Air Accident statistics :

- a) Accidents - 14,
- b) Pilots Killed - 6,
- c) Pilots injured - 7,
- d) passengers killed - 6,
- e) passengers injured - 5



### SELF-TAPPING SCREWS

BUCK & HICKMAN, LTD., of 2, Whitechapel Road, E.1, are the distributors in England for Parker-Kalon hardened self-tapping screws. These are offered as a quick and cheap method of joining sheet metal and making fastenings on to it from any gauge between 28 and 6. They cut a thread in the metal as they are screwed in, thus eliminating the cost of tapping, and are also satisfactory when the metal is too light to tap in the normal way. Due to the fact that they cut their own thread, they are also said to be much securer under vibration than a normal screw. For assembling small aluminium castings or articles made of Bakelite, hard rubber, fibre, and similar materials, these screws are equally useful.

1932 : McGill University <sup>213</sup> :

1. **DOES NOT** offer a "Degree" in Aeronautical Engineering. A "*course of lectures on Aeronautics and Aerodynamics*" is given within the Engineering Faculty.
2. The McGill University Aeroplane Club prepares students for the tests required by the "Dominion of Canada"
3. The dept. of Extra-mural Relations conducts "Ground School", which is free to undergraduates preparing for the "Dominion of Canada" examinations for "Pilots".

1932 : University of Toronto <sup>214</sup> :

1. There has been considerable demand amongst students of the University, *and others*, for a "Course in Aeronautics". However the undergraduate course is too crowded with fundamental sciences to provide more than a limited instruction in Aeronautics.
2. "Properly Qualified" graduates of the University will be assisted in "Post-Graduate Courses" in *the Principles and Application of the Science of Aeronautics*. The University will give an Advanced Degree after the satisfactory completion of a year's work. This will enable "well trained Engineers" to specialise in this branch and to carry out experimental work in the University's wind tunnel.

<sup>213</sup> The Study of Aeronautics at Universities : Air Annual of the British Empire 1932-33 : p 499 - 501. C.G Burg Editor, London, UK.

<sup>214</sup> The Study of Aeronautics at Universities : Air Annual of the British Empire 1932-33 : p 499 - 501. C.G Burg Editor, London, UK.

## Notes on "Civil Aviation"

3. Graduates of the University of Toronto *Faculty of Applied Science and Engineering* (with aeronautical courses) are eligible for **Permanent Commissions** in the Royal Canadian Air Force.
4. At present, a number of University of Toronto students are offering themselves for the "Cadet Course" conducted by the R.C.A.F at Camp Borden. The R.C.A.F's "Cadet Course" is designed for "University Men" (i.e those who have education, and in most cases come from the "Upper Crust of Canadian Society") and is conducted during the summer vacation. Instruction in "*Ground Engineering*", *Rigging, Engines, etc as well as "Practical Flying"* is given during the Cadet Course.
5. The University of Toronto possesses the "Original" wind tunnel constructed in Canada. (The National Research Laboratory was established in the Dominion of Canada in 1931 and its' wind tunnel is the 2nd wind tunnel in Canada.)

### 1932 Licensing Statistics

Nation	Great Britain	Australia	Canada (31 Dec, 1932)	New Zealand	South Africa	India	Total
<b>Aircraft</b>							
<b>Aircraft Owners</b>							
<b>Aerodromes and Air Ports</b>							
<b>Pilots</b>							
<b>Pilot "A" Lic.</b>							
<b>Pilot "B" Lic</b>							
<b>Navigators</b>							
<b>Civil Aviation Ground Engineers</b>							

CANADIAN AVIATION - 1933

January 1933 :

February 1933 :

17 February 1933 : Dr. J. Clarence Webster, D.Sc., LL.D., F.R.S.C., presents to the Dominion Government, the "John C. Webster Memorial Trophy" in memory of his son. He accompanied the presentation by a statement setting forth the purposes of his gift, and in this statement occurred the following words:-

"I should like particularly to emphasize the great value of our Royal Military College at Kingston. Since Confederation Canada has invested many millions in various enterprises which have produced little return and have added very heavy burdens to the taxpayers. Our expenditures on this institution have proved an investment of constant stability and high return.

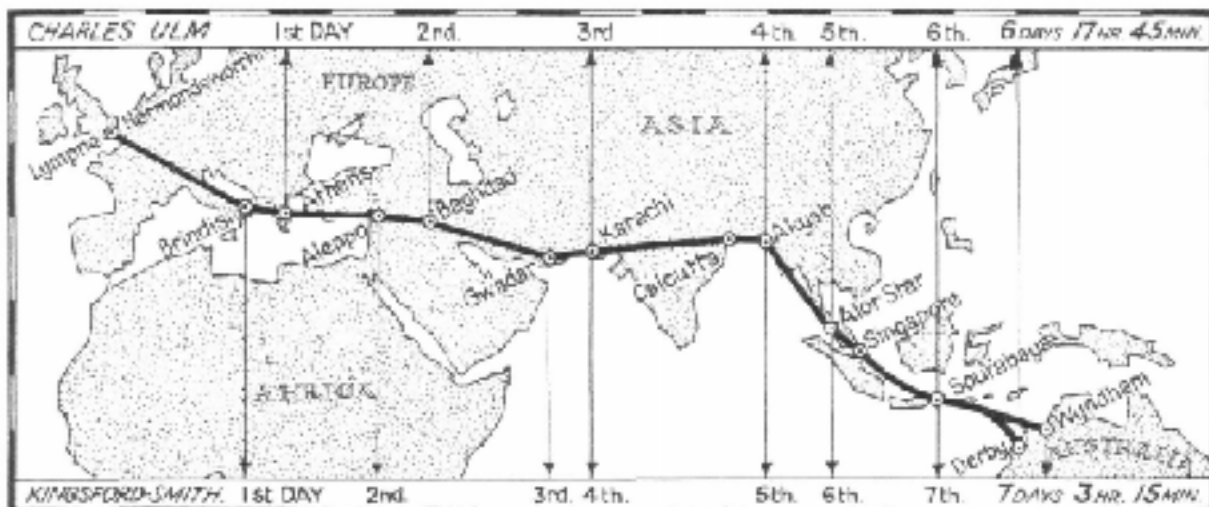
"I have been a teacher for more than 30 years in three great universities, Edinburgh, McGill and Chicago, and have had a wide experience of young men, and it is my firm conviction that the Royal Military College makes a higher proportionate contribution to the citizenship of the State - of men disciplined in mind, body and character, and with an esprit de corps of the highest order - than does any university."

The Webster Trophy Competition is open to any Canadian licensed pilot, either commercial or private, who is not flying professionally. The flying tests consist of two 35 minute periods of general flying under observation and a solo cross-country navigation test of 1 hour duration. Aircraft and judges are supplied by the R.C.A.F.

1933 : RAF Squadron Leader Gayford and Flight Lieutenant Nicholetts fly a Fairey Long Range monoplane from Cranwell, England to South West Africa - a distance of 5,430 miles in 57 hours, 25 minutes, a new world record.

12 October - 19 October 1933 : Avro "X" *Faith in Australia* registration VH-UXX flies from England to Australia in 6 days 18 hours fitted with three Wright J.6 "Whirlwind" engines using Stanavo petrol and Wakefield Castrol oil. . Once called the *Southern Moon*, the aircraft was considerably altered. The wing of wooden construction was widened, lengthened and strengthened, - Cellon dope on the machine's fabric the axles have been altered - Palmer tyres and wheels, and the fuselage strengthened.

The machine has been converted from a passenger machine into a long-range machine. 1,670 miles to Athens in one hop. *Faith in Australia* was to have been flown round the world, but unfortunately came to grief in Ireland, this little flight to Australia was just in the nature of recuperation, with the thought of some sterner work ahead. Crew: Aircraft captain & pilot- Flight Lieutenant C. T. ULM Pilot 2: Pilot 3: Engineer: Mr. Edwards?





## Notes on "Civil Aviation"

1933 : more than a million Canadians were on government-funded relief.

1933-1934 : UK : Gorell Committee on the control of Private Flying, 1933 to 1934 - will result in the formation of the A.R.B in 1937. The Gorell Committee members were Lord Gorell, Captain Harold Balfour, Mr E C Gordon England, Mr W Lindsay Everard, Lt.Col J T C Moore-Brabazon, Mr F Handley Page and Mr W A Workman. the views of the Gorell Committee may have been coloured to some degree by the thought that there could be merit in separating safety and politics. If so, that may help to explain why the development of aviation regulation in the UK followed a path largely different from the rest of the world in moving responsibility away from the direct control of politicians. The report includes an interesting analysis of the causes of accidents to civil aircraft on the Air Ministry Register for the period 1926 - 1933 which sets the background against which the report was written, made a total of 18 recommendations, the majority of which were accepted by the Air Council. Total number of Accidents 355, the majority are due to causes other than "airworthiness"

- a) 29 Engine failure followed by errors of airmanship,
- b) 31 Engine failure in circumstances likely to lead to accident,
- c) 9 Structural failure of aircraft,
- d) 2 Unsatisfactory aerodynamic qualities of machine,
- e) 9 Defective aero-controls,
- f) 2 Outbreak of fire in the air

"Entirely wrong values have been placed upon the relative importance of the pilot, the machine and operational activities, in arriving at the regulations to be imposed. The failure of the pilot is by far the most potential source of accidents in flying."

They made a number of recommendations on

- A. the need for certificates of airworthiness in certain cases,
- B. recommended that third party insurance should be compulsory,
- C. advised that towed gliders and gliders carrying passengers for hire and reward should hold certificates of airworthiness and
- D. that pilots of gliders and gliders carrying passengers for hire and reward should be licensed, considered
- E. that it was inappropriate to attempt to impose restrictions on Sunday flying, and recommended
- F. that the control of airworthiness of civil aircraft should be devolved to a statutory autonomous Board
- G. statutory autonomous Board to be formed from the Joint Aviation Advisory Committee of Lloyd's Register and the British Corporation Register.
- H. that the New Board Responsible For Airworthiness should be called the Air Registration Board,
- I. The members of the Air Registration Board will be responsible the Secretary Of State for Air for the maintenance of airworthiness all civil aircraft.

"We agree with the pronouncement in the Ross Committee report that 'the policy of control of private flying . . . cannot be settled in isolation; the future control of civil aviation in respect of all airworthiness matters must be considered as a whole.', " We feel there is substance in the representations of the SBAC and others . . . ", "without the good relations which exist between Air Ministry officials and firms, aircraft construction in present conditions would be almost impossible".

Sir Frederick Handley was chairman of the Committee created for the purpose of drafting a scheme. this was a blueprint for the Air Registration Board, and the ARB which came into operation in February 1937 (Journal of Aeronautical History Paper No. 2011/ 3 - SAFETY REGULATION - THE FIRST 100 YEARS - J. C. Chaplin C.B.E., F.R.Eng., F.R.Ae.S. formerly w/ Civil Aviation Authority)

## Notes on "Civil Aviation"

The main duties of the A.R.B (a Quasi-autonomous public body - similar to others, ICAN, ICAO, IATA etc may have been been short-sighted in relation to distributed public governance and may have significant implications for successful delivery of various Government's safety policies - In this context, sub-national and national quasi-autonomous actors frequently operate within the jurisdiction of an independent body operating beyond the nation state. For example, national independent banks operate within the jurisdiction of the European Central Bank. In essence, then, distributed public governance is less insular than traditional approaches to this field and emphasizes the evolution of different structures and models of multi-level governance existing at one removed from state structures. Within the British state there exist a great many bodies that are neither responsible nor directly responsive to the vote of the people. This is not a new phenomenon. The embryonic British state of the nineteenth century was largely based around independent appointed boards until concerns regarding accountability increased the popularity of the departmental model. However, in the late 1970s, a number of academics were beginning to express concerns regarding the ad hoc proliferation of these bodies (see Goldston 1977; Doig 1978, 1979; Chester 1979; Johnson 1979) powers of patronage were used to appoint supporters to key positions. delegation of functions to autonomous actors increases fragmentation and the number of potential veto points. vaunted belief in the 'depoliticization' of certain policy fields through delegation to independent bodies - mechanisms of distributed, or delegated, governance as a core element of its statecraft strategy - Source ref for ideas DISTRIBUTED PUBLIC GOVERNANCE IN BRITAIN by MATTHEW FLINDERS \*\*\* a clearer rationale and governance framework is needed \*\*\* ) are centred on the investigation of aircraft in relation to the issue and renewal of certificates of airworthiness. The Chairman Sir Maurice E. Denny, Mr T R Thomas, secretary

This investigation entails, inter alia (legal terminology : among other things):  
publication of standards for design, (Air Registration Board (ARB) Specification)  
publication of standards for construction  
publication of standards for maintenance; (Air Registration Board (ARB) Civil Aircraft Inspection procedure (CAIP) Leaflet) (<http://www.dhmothclub.co.uk/tns/tns33.htm>)  
approval of manufacturers' organizations,  
approval of engine types,  
approval of equipment,  
approval of modifications,  
approval of flight manuals  
approval of performance schedules;  
publication of notices to engineers,  
publication of inspection leaflets,  
publication of defect reports and  
publication of an aircraft register.  
responsibility for examining and licensing aircraft maintenance engineers  
holding of technical examinations for flight engineers and commercial pilots.

The A.R.B. represents the U.K. at international discussions on airworthiness matters and undertakes the work of investigating and reporting on aircraft for underwriters and others.

The A.R.B also assists Dominion, Colonial and foreign airworthiness authorities with duties similar to those of the UK-A.R.B. The Council of the Board, which formulates policies, consists of 18 persons (who are not paid for their services).

- A. Four must be representatives of the aircraft operators;
- B. four must be representatives of the aircraft manufacturers;
- C. four must be representatives of the insurance underwriters;
- D. four must be independent members.
- E. One member (appointed by the Ministry of Transport and Civil Aviation "M.T.C.A") must represent the public
- F. One member (also appointed by the M.T.C.A.) must represent the professional pilots.

The operators, manufacturers and underwriters appoint their own representatives and also appoint the four independent members. (as of 1955)

An advantage claimed for this organization of the council is that "no particular group wields a preponderating influence".

The staff of the Board numbers about 230, more than half of whom are technical staff, known as surveyors.

The chief executive is also secretary to the Council, the execution of whose policies is his responsibility. The Board has two main offices in London, 16 area offices in the United Kingdom and eight offices overseas.

## Notes on "Civil Aviation"

The Board's income comes from:

fees for issuing and renewing Certificates of Airworthiness, for approving firms, engines and equipment and for examining aircraft maintenance engineers and pilots.

Minor sources of income are from contracts with foreign governments for advice and from the publication of technical literature.

The technical organization of the A.R.B. is divided broadly into:

A. design department

B. inspection department

each having various sub-branches to deal with the Board's work in connection with the investigation of aircraft and associated equipment.

The Board policy on responsibility for airworthiness "as much as possible of the work and responsibility in airworthiness matters should be delegated to those actively engaged in the industry, thus obviating the need for a very large regulating authority"

This is accomplished by delegation :

to suitable constructors' design organizations so that they may certify that the design of the aircraft complies with the Board's standards,

to suitable inspection organizations so that they may certify that the aircraft, engines, equipment and materials conform to the appropriate drawings and specifications.

to suitably licensed aircraft (Ground) engineers to certify that aircraft are maintained to the required standards.

In each case the Board retains the right of supervision.

[See also "Airworthiness" article, page 318.]

CHAIRMAN, Lord Brabazon of Tara, P.C., C.B.E., M.C.,  
F.R.Ae.S.; SECRETARY AND CHIEF EXECUTIVE, R. E. Hardingham,  
C.M.C., O.B.E., F.R.Ae.S.; CHIEF TECHNICAL OFFICER, Walter Tye,  
O.B.E., B.Sc, F.R.Ae.S. ADDRESS : Brettenham House, Strand,  
London, W.C.2. (Flight March 1955)

1933 : Detailed requirements for Civil Aircraft airworthiness, structural strength etc established ( based on Wood, Steel Tube, Fabric and the introduction of aluminium). Design Leaflet F.1 of AP1208 requires that "Normal" category aircraft: a) must clear an obstacle 66 ft (20m) above the level of the aerodrome of departure without covering more than 546 yards (500m) in a horizontal direction. and b) Normal category aircraft must reach an altitude of 1378 feet (420m) above the level of the aerodrome of departure in less than 3 minutes.

July 1933 : Aviation Weekly - USA : Lo. the poor private pilot !

AS AN ALMOST universal rule, in almost every state and country, the automobile that is to carry passengers or freight for hire receives a distinctive type of license and bears a distinctive type of number-plate.

It, and its driver as well, must often meet special requirements going far beyond those imposed on purely private operation.

A motor boat that is to ply for hire is subject to special rules and to a particular type of government inspection.

But with aircraft no distinction is recognized.

The **NC license** that goes onto a private plane, never flown by anyone except the owner and never used for a commercial purpose, is exactly the same as the license that goes onto the machine that is kept in daily service in taxi work or in carrying sight-seeing passengers.

There is no difference between them in the requirements for relicensing.

There is no difference in the frequency of re-inspection that is legally exacted.

Seven years ago last month the US Department of Commerce was charged by law with the supervision of civil aviation.

The personnel of the new-born Aeronautics Branch undertook to make flying safe.

## Notes on "Civil Aviation"

They have had remarkable success, particularly in the transport field, where the co-operation of operators and government has brought the hazard very nearly to zero.

But now the time has come for reconsideration, in the light of seven years' experience, and for deciding how far the Federal Government's responsibility for the safety of every aircraft that flies should extend. We have been considering that question for some time. Now we propose a new rule.

We suggest that the government has four obligations in connection with safe flight:

- (1) to protect the general public on the ground;
- (2) to protect the passenger in a commercial plane;
- (3) to protect the careful pilot from the careless or reckless one; (
- (4) to protect everybody concerned, to a reasonable extent, from being exploited or defrauded.

Just those four. No more.

Under no one of the series is it possible to justify the present handling of private planes and private pilots.

ONCE each year, it now becomes the duty of every owner of a licensed airplane to get it to a Department of Commerce inspector for re-examination and re-licensing.

If the owner is a business man, and if he doesn't happen to be near an airport at which an inspector makes regular calls, he can either leave his business to take the plane to the inspector or he can hire a pilot to fly it to inspection headquarters. Both are inconvenient, and time-consuming, and expensive.

The public danger from an airplane with a bad wing spar is not one-tenth part of that which comes from an automobile with bad brakes, yet the airplane is subjected to a relicensing rule that no one ever thinks of imposing on the automobile. Aircraft have now reached the point where they ought to be put at least on a common footing with other vehicles that constitute a far greater menace to the innocent public.

In the one-year intervals between license renewals, every plane must be checked over by a licensed mechanic at least at seven-day intervals. Good practice, to be sure. A practice that most owners would no doubt observe of their own accord. But not, we suggest, a practice that the Aeronautics Branch as the guardian of public safety should be charged with forcing upon every owner.

Every time the plane is flown, even though no one but the owner ever flies it and he never flies any other machine, the fact must be recorded. It must, in fact, be recorded repeatedly, for regulations require that airplane, engine, and pilot each have a log-book.

In commercial operations, or for pilots who hold or who expect to seek commercial employment, all this paperwork is genuinely valuable. Exacted from the private owner-pilot, it isn't worth the trouble it makes. It doesn't seem to us any more the business of the government to make every pilot keep up his log-books than it would be to prescribe that every farmer should keep a Diary

EDITORIALS - Aviation : Edward P. Warner editor.

05 October 1933 : Flight : To Aid the Gorell Committee A MEETING was held at the Royal Aero Club on Thursday, October 5, in order to elect three persons from among those interested who can answer question concerning *the point of view* of those using private aircraft, before the Gorell Committee. Those elected were

1. Maj. H. J. Petre (R.Ae.C. nominee),
2. W. L. Runciman and
3. Mr. F. D. Bradbrooke.

12 October 1933 : Margaret Fane obtains PPL, works towards Air Engineer's certificate. CPL obtained 29 August 1935 (Joined C.P in YVR!)

30 October 1933 : the last Curtiss Aileron patent expires.

1933 Imperial Airways (UK) finally realises continuous service to the Cape Town, South Africa

1933: RCAF reorganisation as "military air service" continues.

## Notes on "Civil Aviation"

1933: Formation of 1st "service squadrons ". No. 4 (Flying Boat) Squadron RCAF - Vancouver, No. 5 (Flying Boat) Squadron RCAF - Dartmouth, No. 7 (General Purpose) RCAF - Ottawa and No. 8 (General Purpose) RCAF - Winnipeg.

1933 : Royal Air Force, Halton, upon the occasion of the Passing-Out of the 22nd (September, 1930) entry of Aircraft Apprentices.

Of the 550 boys originally attested :

69 were posted to the Electrical and Wireless School for training as Electricians and Wireless Operator Mechanics ;

8 were granted discharge by purchase ;

21 were discharged as " Unlikely to become efficient airmen " ;

9 were discharged on medical grounds ;

3 were remustered to Aircrafthand ;

4 died ;

12 were transferred to junior entries ; and

14 were transferred from senior entries,

leaving 438 to pass-out from Halton

These have 438 been trained as follows :

Fitters, Aero Engine, 237 ;

Metal Riggers, 172;

Fitters, Armourer, 15; and

Coppersmiths and Sheet Metal Workers, 14.

As a result of the final examinations :

69 Aircraft apprentices, have been classified as Leading Aircraftmen ;

323 have been classified as Aircraftmen, First Class ;

38 have been classified as Aircraftmen, Second Class ;

3 aircraft apprentices failed to qualify ; and

5 were not examined owing to sickness.

The number of apprentices of this entry who have been classified as either Leading Aircraftmen or Aircraftmen, First Class, is approximately 90 per cent; this is the highest percentage of any entry on passing-out.

The standard of cleanliness of barrack rooms and upkeep of kits and equipment is very satisfactory.

On the whole, the general behaviour of the entry has been excellent.

In games the entry has been above the average, particularly in swimming ;

6 apprentices of this entry have been selected to represent the Command, and

one was chosen to represent the Royal Air Force in the Inter-Services Swimming Championships.

Efforts have been made, with considerable success, to have every apprentice playing some, if not all forms of sport, the number taking part in no games at all being very small.

As a result of the final examination in educational subjects :

21 gained the distinction of obtaining 75 per cent, or more of the total number of marks ; in addition to these,

350 gained exemption from the educational test for reclassification to Leading Aircraftsman, by obtaining over 50 per cent, but under 75 per cent., while

67 failed to obtain 50 per cent, of the total number of marks.

### CANADIAN AVIATION - 1934

1934 : RAF still looks like a First World War force of wooden biplanes

Squadron Leader T. Stanhope Sprigg - Air Licenses published by Sir Isaac Pitman & Sons, London, 1934:

"The Air Ministry accepts no responsibility for the accuracy of the contents of this publication."

Contents.

Chapter headings:

1. Pilot's "A" Licence;

2. Pilot's "B" Licence;

## Notes on "Civil Aviation"

3. Master Pilot's Certificate;
4. Instructor's Certificate;
5. Navigators' Licences;
6. Ground Engineers' Licences;
  1. defined in the AND as "one who is licensed as a competent person for the inspection, maintenance, etc of aircraft and engines.
  2. essential to the operation of all British Civil Aircraft ( no machine may fly without prior inspection and the approval of the condition of the aircraft and engine.
  - 3.
7. Balloon Pilots' Licences;
8. Airship Pilots' Licences;
9. Wireless Operators' Licences;
10. Exhibition Parachutist's Licence;
11. Gliding Certificates;

### Appendices:

1. Syllabus of the Technical Examinations for Pilot's "A" and "B" Class Licences /
2. Syllabus of Examination for Navigator's Second-Class Licence /
3. List of Books for Study /
4. List of the Principal Civil Aeronautical Training Centres.

1934: Austin Air Service (Austin Airways) begins operation using Waco cabin biplanes.

1934 : the findings of the the Gorell Committee recommends that control off airworthiness of UK civil aircraft be handed over to an autonomous executive authority, to be composed of representatives of manufacturers, operators and under- writers. The Air Council accepted the recommendation in principle, but for the time being restricted the supervision of the the ARB to design and prototype inspection of aircraft up to 10,000 lb gross weight and fewer than 11 passengers. Dr. Roxbee Cox - Flight March 1939 page 227)

The Air Registration Board began this work in April 1937. ARB was responsible for the inspection of "subsequent" aircraft and for renewal of Certificates of Air-worthiness - irrespective of size (Dr. Roxbee Cox - Flight March 1939 page 227)

1934 : Prospect Point, BC - 11 Army Cooperation Sqn Royal Canadian Air Force operates float-equipped de Havilland DH 60M Cirrus Moth RCAF # 152?

1934 : The Commission Government of Newfoundland operate two aircraft.

1934 : The last Avro 504K aircraft in service was decommissioned. Thus ending the flying of "Imperial Gift" aircraft in Canada.

1934 : "British air power must include a Home Defence Air Force of sufficient strength adequately to protect us against air attack by the strongest air force within striking distance of this country" - Prime Minister Stanley Baldwin

FRIDAY, 27th April, 1934 - Ottawa : Parliament : With leave of the Senate, it was Ordered:-

That the said Report be placed on the Orders of the Day for consideration to-morrow. On motion of the Honourable Senator McDonald, it was Ordered, That an Order of the Senate do issue for a Return showing:

1. What assistance did the Government offer commercial aeroplane operators, if any, in 1933?
2. What further assistance, if any, is planned for commercial aeroplane operators in 1934?
3. What subsidy did the Government give the Flying Clubs in aeroplanes and cash in 1933?
4. Has this subsidy been increased for 1934? If so, why?
5. Do the commercial operators get the same subsidy for the same work done as the Flying Clubs? If not, why not?
6. Are airports in Canada being closed? If so, why?
7. Does the Government give any subsidy to encourage the airport operators?
8. What is the Government .doing to encourage the establishment of an inter-city passenger service?
9. Has the Government any definite policy as to the development of commercial aviation in Canada? If so, what is it?

## Notes on "Civil Aviation"

10. Is it the policy of the Government to operate air services in Canada as a Government undertaking or is the Government encouraging private enterprises along this line?
11. How much photography, mapping and survey flying was done in 1930, 1931, 1932 and 1933 by the Royal Canadian Air Force and what was the cost of same?
12. Could this work have been carried out by commercial operators? If so, why were commercial operators not used?
13. How much air mail flying was carried out by the Royal Canadian Air Force in 1930, 1931, 1932 and 1933 over a regular route and what was the cost of the same? Why was not this work done by commercial operators?
14. Would an independent committee made up in part of active commercial operators be of value to the country to investigate the aviation industry as a whole in Canada and bring in a recommendation to the Government?
15. To what extent has the Royal Canadian Corps of Signals taken over the radio service previously maintained by commercial Air Transport Firms in the Northwest Territories?
16. Are any extensions of this policy contemplated in the near future?

The Order is subsequently dated May 1, 1934. <sup>215</sup>

22 May 1934 : Ottawa : THE SENATE : The Honourable Senator Dennis, from the Special Committee appointed to consider the immense possibilities of the tourist traffic and to inquire as to the means adopted by the Government looking to its encouragement and expansion, presented their third Report : "of equal importance is the consideration of aviation in tourist travel.

Before the business recession a few years ago, this form of travel, both inter nationally and within Canada, was growing remarkably in volume and popularity; and the early future will witness a resumption of this growth. Therefore, the possibility of aerial transport should be explored in its relation to the tourist trade, and wherever possible, advantage should be taken of its utility and inducements" <sup>216</sup>

15 - 29 May 1933 : 3rd International Conference on Private Air Law, Rome.

July 1934 : Recognising that Adolf Hitler has plans on Europe, Britain initiates a program to expand the Royal Air Force.

02 August 1934 : England : Memorandum to "Short Service" Officers of the RAF :

*Short service officers* are reminded of the importance of *preparing* in good time *for return to civil life*.

Suggestions relating to educational preparation are contained in a memorandum which was issued to all commands in May, 1934.

*Copies of this document can be obtained* at any time *by application to station educational officers* and *will be issued by the latter without special application to all short service officers on posting from their flying training schools*.

*An important section of the memorandum deals with civil aviation*.

Certain commercial firms require candidates for posts as pilots to possess not only a commercial pilot's "B" Licence but (also) other licences such as:

1. the 2nd Class Navigator's Licence,
2. the Postmaster-General's W/T Air Operator's Licence, and
3. the "A" and "C" Ground Engineers' Licences.

*Short service officers* who contemplate seeking employment in *civil aviation* are *therefore strongly advised to obtain these licences before they leave the service*. Full particulars relating to the licences are contained in the memorandum. <sup>217</sup>

14 November 1934 : Hurricane prototype ordered by the RAF

1 December 1934 : Spitfire prototype ordered by the RAF

End 1934 : RCAF "bush pilots in uniform" remain involved in civil government air operations.

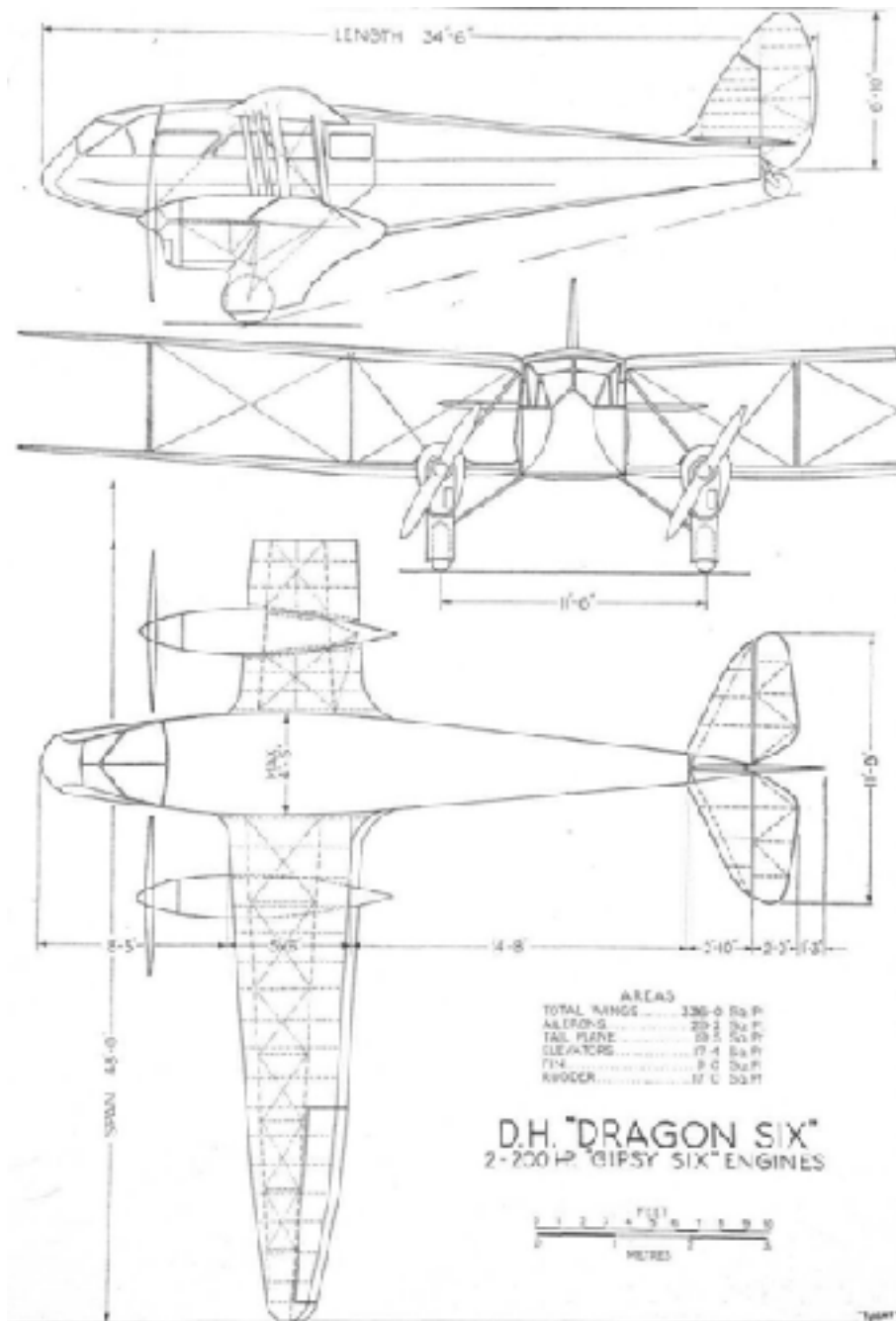
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<sup>215</sup> JOURNALS OF THE SENATE OF CANADA FIFTH SESSION OF THE SEVENTEENTH PARLIAMENT 24-25 GEORGE V, A.D. 1934 VOLUME LXXII, J. O. PATENAUE, PRINTER TO THE KING S MOST EXCELLENT MAJESTY OTTAWA, 1934

<sup>216</sup> JOURNALS OF THE SENATE OF CANADA FIFTH SESSION OF THE SEVENTEENTH PARLIAMENT 24-25 GEORGE V, A.D. 1934 VOLUME LXXII, J. O. PATENAUE, PRINTER TO THE KING S MOST EXCELLENT MAJESTY OTTAWA, 1934

<sup>217</sup> Royal Air Force - Service Notes and News - Air Ministry Announcements : pg 796 : Flight - August 2, 1934

## Notes on “Civil Aviation”



1934 - Canadian Airways operate DH Rapide aircraft



**CANADIAN AVIATION - 1935**

November 1935 : prototype Hurricane first flight.

1935 : this organisation conducted a house-to-house ballot which involved people knocking on doors and asking folk to sign a pro-forma indicating that they supported the idea of all international problems being solved by peaceful means, with the League of Nations being promoted as the appropriate forum for settling such disputes, much as the UN is supposed to do today. The fact that this initiative succeeded in attracting some 11 1/2 million signatures was clearly something that the Air Ministry needed to take into account. After all, it appeared that a very substantial proportion of the population was saying that it did not wish to be associated with military solutions.

1935 : Canada - a plan for a national airline was being considered by Bennett's government. However, a fall election brought the Liberals back to power and Prime Minister William Lyon Mackenzie King put the transportation portfolio into the hands of Clarence Decatur Howe.

24 September 1935 : Meeting of the Imperial Committee on the "Trans-Atlantic Air Service" <sup>218</sup> classified as "Secret" wherein it is noted that within the Ottawa (Imperial) Conference with specific date of 16 August 1932, para 6A that "the Governments of the UK, Irish Free State, Canada and Newfoundland "should give every possible preference to the route".

- A. Great Britain:-
  - A. Sir William Clark, High Commissioner
  - B. Lieut.-Col. F.C. Shelmerdine, Dir. of Civil Aviation, British Empire ?
- B. Canada:-
  - A. H.Guthrie (Chairman)
  - B. Maj. Gen. A.G. McNaughton ( ?? ) with technical assistants from:
    - A. DND Rep.
    - B. Post Office Rep.
    - C. Dep. External Affairs
    - D. Dept. of Marine (and Fisheries)
- C. Newfoundland:-
  - A. Mr. Emerson
  - B. Mr. Hutchings
- D. Irish Free State :-
  - A. Mr. Lemass
  - B. Mr. Walshe

The key points submitted by the above committee <sup>219</sup> were:-

1. "The UK, Irish Free State, Canada and Newfoundland control the approaches to the most direct trans-Atlantic crossing"
2. The Aeronautical activities of foreign governments
3. It is imperative that steps be taken by the UK, Irish Free State, Canada and Newfoundland governments to safeguard their position relative to Trans-Atlantic Air Services.

the UK, Irish Free State, Canada and Newfoundland governments agreed to give precedence to the (London UK - Shannon? Ireland - Gander Newfoundland - Montreal, Canada) route and that

- v) they will not actively support the development of any other route
- vi) they will not give privileges to any foreign government of their nationals (corp's or citizens) in respect to
  - i) the operation of trans-Atlantic air services,
  - ii) the operation of trans-Atlantic steamer services,
  - iii) The establishment of Air Bases
  - iv) The establishment of air navigation facilities for such services
 without the full and prior consultation with each other.

<sup>218</sup> "Trans-Atlantic Air Service" British Cabinet Memorandum C.P 182 (1935) prepared by the Secretary of State for Air. Important to see also British Cabinet Memorandum C.P 164 (1935) and the minutes of the Imperial Conference 1932.

<sup>219</sup> [http://www.ganderairporthistoricalsociety.org/\\_html\\_thirtys/agreement.htm](http://www.ganderairporthistoricalsociety.org/_html_thirtys/agreement.htm)

## Notes on “Civil Aviation”

1935 : A decision of undertaking is made by the British Air Ministry and the Canadian Government to invest into the construction of a major airport at Gander Newfoundland to support “Trans-Atlantic” air travel. “one the largest airports in the world to prepare for a war that hadn't started and to promote trans Atlantic air travel for land based aircraft that didn't exist.”  
<sup>220</sup> Newfoundland is still not part of Canada. The airport was to be the interior airport hub for an Imperial Airways air route.

1935: Canadian Airways Ltd operates Boeing A-213 'Totem' flying boat CF-ARF.

1935 Boeing designs Model 307 “Stratoliner” four-engined civilian airliner based on the Model 299 bomber. It combined the wings, tail, rudder, landing gear, and engines from their production B-17C with a new, circular cross-section fuselage of 138 in (351 cm) diameter, designed to allow pressurization. It wasn't long before commercial aircraft construction had ceased and entire new plants created to do one thing... build bombers. Only ten Stratoliners were built. and TWA sold back their five airframes to the Army when war was declared. They became known as the C-75 and were returned to TWA in 1944

1935 : British Gov't asks Canadian government to increase the annual quota of Canadian applicants to RAF to 25.

October 1935 : Conservative Richard Bedford Bennett defeated in the federal election

October 1935 : Liberal William Lyon Mackenzie King regains power.

October 1935 : Ian Alistair Mackenzie (veteran of the First World War) obtains the National Defence portfolio. Prime Minister King, concerned about the tensions prevailing worldwide, decided in

.

Labour Employed by principle British Airframe Manufacturers to HM Government 1935 (Source ref: P.R.O , Air, 8/196 2306)			
Manufacturer	Personnel Employed as of April 1935		
	Trades Persons involved w/ Mfr of Airframes on the shop floor	Design, Cerial, Research and sales staff	Total
Sir. W.G Armstrong Witworth Aircraft Ltd	837	255	1092
Boulton & Paul Aircraft Ltd	500	100	600
Bristol Airplane Co. Ltd	1139	277	1416
Blackburne Aeroplane Co. Ltd	1100	270	1370
De Havilland Aircraft Co. (UK) Ltd	1060	530	1590
Fairey Aviation Co.Ltd	1500	400	1900
Handley Page Ltd.	970	190	1160
Hawker Aircraft Ltd.	1523	233	1756
Gloster Aircraft Ltd. (a Hawker subsidiary)	970	230	1200
A.V.Roe	1207	113	1320
Supermarine Aviation Works (Vickers) Ltd.	621	190	811
Shorts Bros. Ltd	1133	321	1454
Saunders-Roe Ltd	480	174	654
Vickers Aviation Ltd	1560	350	1910
Westland Aircraft Works	242	64	306
G. Parnall & Co.	61	20	81

<sup>220</sup> [http://www.ganderairporthistoricalsociety.org/\\_html\\_thirtys/the\\_thirtys\\_era.htm](http://www.ganderairporthistoricalsociety.org/_html_thirtys/the_thirtys_era.htm)

## Notes on “Civil Aviation”

Labour Employed by principle British Airframe Manufacturers to HM Government 1935 (Source ref: P.R.O , Air, 8/196 2306)			
	Trades Persons involved w/ Mfr of Airframes on the shop floor	Design, Cerical, Research and sales staff	Total
Totals	14903	3717	18620

### CANADIAN AVIATION - 1936

March 1936 : prototype Spitfire first flight.

07 March 1936 : Ground forces of the German Reich enter and occupy the Rhineland, a designated “de-militarized zone” providing a buffer between Germany and her borders with Netherlands, Luxembourg, Belgium, and France in the 1920 Treaty of Versailles. This action also violated the 1925 Locarno Pact.

1936 : UK : Air Navigation Act 1936. The Secretary of State for Air delegates “certain of his functions” in respect of civil aircraft, previously undertaken by the Civil Aviation Department - A.I.D, to an Air Registration Board “A.R.B” (formally constituted in 1937).

The ir Registration Board comprised:

- A. four operators appointed by the trade interests (Companies not Trades-persons / Trades-men) concerned,
- B. four constructors / manufacturers' appointed by the trade interests concerned
- C. four insurers appointed by the trade interests concerned,
- D. a representative of the general public appointed by the Secretary of State
- E. a professional pilot with not less than five years' experience as a pilot of civil aircraft appointed by the Secretary of State,
- F. four independent members appointed by the Board.

The duties of the Board:

To advise the minister responsible for civil aviation on matters pertaining to the airworthiness of civil aircraft, eg the approval of modifications to aircraft, the renewal of certificates of airworthiness, daily inspection certificates, etc.

Following the government's acceptance of the recommendation of the Committee of Inquiry into Civil Air Transport, 1967 to 1969, that a new body should be made responsible for the economic, operational and technical regulation of civil aviation, a new Civil Aviation Authority was created under the Civil Aviation Act 1971 and the work of the Board was incorporated within it.

1936 : RAF Squadron Leader Swain - wearing a pressurisation suit - reaches a height of 49,944 feet in the Bristol 138 high altitude monoplane

1936? : The Grumman corporation “Goose” a name originally bestowed on the aircraft by the Royal Air Force.

1936 : The design code used for de Havilland civil aircraft was **AP1208**, 'Airworthiness Handbook for Civil Aircraft', but usually with **AP970** ('Handbook of Strength Calculations') mentioned as the source of methodology for derivation of load factors and **Practical Aircraft Stress Analysis**.

1936 : **Air Publication 1208** categorises 3 Categories of “Civil Flying Machines” and their airworthiness requirements:

- A. **Normal** - the requirements are quite clear,
- B. **Aerobatic** - the requirements are quite clear
- C. **Special** - "for aircraft in the Special category definite requirements are not specified as each individual aircraft will be treated on its merits".

1936 : UK Air Ministry Air Publication AP1208 - Airworthiness Handbook for Civil Aircraft

## Notes on "Civil Aviation"

1936 : UK Air Ministry Air Publication AP970 - Handbook of Strength Calculations.

1936 : Pitman's (UK) publishes Practical Aircraft Stress Analysis, by de Havilland Technical School lecturer D. R. Adams.

1936 : The National League of Airmen (NLA) interested in exploiting the flying club movement.

1936 : The Air League of the British Empire (ALBE) interested in exploiting the flying club movement.

1936 The National League of Airmen approaches the Air Ministry with a plan for "Business Houses Flying Clubs". The notion was that fifty business houses would each sponsor a flying club and that the men joining these clubs would be available for service in the event of an emergency. Coincidentally, this proposal was submitted to the Ministry just as it was considering the creation of the Volunteer Reserve - RAF.

1936? : SPITFIRE DESIGN aerodynamicist Beverley Shenstone MSc, HonFRAes, FAIAA,AFIAS, FCASI, HonOSTIV. As R.J. Mitchell's chief aerodynamicist, it was Beverley Shenstone who designed the Spitfire's wing - the wing that gave the Spitfire its crucial advantage in the Battle of Britain and beyond.

A quiet man, Shenstone never sought glory for his work, yet in recent years he has been credited as the man who persuaded Mitchell to adopt the ellipse - a modified ellipse that was unique in its shape and its combined use of two integrated aerofoil sections. **Shenstone's knife-edge shape reached far back into early aeronautics for its inspiration.** The other forgotten Spitfire design contributors : Mr Faddy, Mr Fear, Mr Fenner, Mr Shirvall, a Prof Howland and others.)

Beverley Shenstone had left his native Canada and early training as an RCAF pilot, to study at Junkers and then under the father of the delta wing - Alexander Lippisch in Germany in the early 1930s.

Beverley Shenstone became immersed in delta wings and flying wings under the father of the delta wing - Alexander Lippisch in Germany. He also became a glider pilot.

The story of how Beverley came to be in the right place at the right time is revealed for the first time. So too are the enigmatic tales of his involvement with the military, the intelligence world, Lord Beaverbrook, the USAF and Canadian aviation.

During the war Beverley Shenstone worked at the top secret Wright Patterson air force base and was involved with the UK Air Ministry and the pro-British movement in America when Beverley Shenstone worked for Air Chief Marshal Sir Wilfrid Freeman, the unsung hero behind British defence procurement.

Beverley Shenstone achieved high office - a President of the Royal Aeronautical Society, technical director at BOAC, chief engineer at BEA and a consultant to several aircraft makers.

Beverley Shenstone courted by Avro, de Havilland and Vickers, and was the force behind the renaissance of human-powered flight. Using exclusive access to his family documents, his unpublished autobiography and many notes and stories, as well as forensic research, this book details for the first time, a new twist to the Spitfire's story and the secrets of its advanced science. A tale of design and military intelligence reveals a story of a man whose name should be more widely known in the UK, Canada and the aviation world (Secrets of the Spitfire: The Story of Beverley Shenstone, the Man Who Perfected the Elliptical Wing (Hardback) Lance Cole Published by Pen Sword Books Ltd, United Kingdom (2012) ISBN 10: 184884896X ISBN 13: 9781848848962)

1936 : RCAF reorganised as a purely military organization.

1936, a serving Canadian in the RAF made a proposal that would eventually lead to the creation of the BCATP. Group Captain Robert Leckie, then Superintendent of the RAF Reserve, submitted a memorandum detailing the strategic advantages of creating an aviation training facility in Canada.

August 1936 : Air Commodore Arthur Tedder, then Director of RAF Training, and Lord Swinton, the British Secretary of State for Air, put forward the idea to the Canadian Minister of National Defence, Ian Mackenzie. Mackenzie was very anxious to cooperate in all such matters, and stated that personally, he would be "...only too glad to accede" to this proposal.<sup>6</sup> However, when he put forward the matter to the Prime Minister in September, Mackenzie King had a very different opinion. This was reflected succinctly in Cabinet's September decision that it would be "...inadvisable to have Canadian territory used by the British government for training school purposes for airmen. Canada's Minister of National Defence Ian Mackenzie was ready to concede to Britain's will. Only Prime Minister Mackenzie King prevented this from occurring.

1936 : Department of Transport (DOT) created to take over responsibility for civil aviation matters from DND.

1936 : RCAF authorised to form three military squadrons of two flights each.

## Notes on "Civil Aviation"

No. 2 (Army-Cooperation) Squadron, No. 6 (Torpedo Bomber) Squadron, No. 3 (Bomber) Squadron

Post 1936 : RCAF's involvement in Civil Air Service Operations was supposedly limited to aerial photography and search & rescue

Post 1936 : RCAF begins development as a military air force.

1936 : J.K. Lewis, certified as Canadian civilian Air Engineer

1936 : T. McLaughlin, certified as Canadian civilian Air Engineer

1936 : UK Air ministry conducts investigation into UK airframe manufacturers (Process and procedure, staff, skills etc).

1936 : Irish government establishes Aer Lingus, similar to TCA (Lieutenant Colonel Michael C. O'Malley - thesis)

28 May 1936 : Parliament - Ottawa. **Topic:** WAYS AND MEANS, **Subtopic:** DEPARTMENT OF NATIONAL DEFENCE  
Charles Grant MacNeil (Co-operative Commonwealth Federation C.C.F.):

The fact that \$4,130,000 has been voted for the Royal Canadian Air Force, an increase of 81,000,000 over last year's vote, and only \$1,262,000 odd for civil aviation, an increase of only \$511,406 over last year's vote, prompts me to make a few observations regarding what I consider a serious inconsistency <sup>221</sup>. I find that during the years of depression this parliament has voted various sums exceeding in total \$122,000,000, and it is interesting to contrast that with the contributions from the federal treasury for relief purposes, about which there has been so much criticism, amounting to \$160,000,000. In my opinion all we have now as a result of that enormous expenditure by the department is what the officers of the force themselves describe as a bow and arrow army and a teakettle navy. As regards the aviation branch, something which is in the initial stage of development in Canada, I suggest that as far as possible we should avoid the mistakes which have been made in the past and see to it that this branch is not cluttered up with the obsolete traditions from which the military and naval branches have suffered in the past. We are asked again this year to vote, apart from the item now under consideration, some \$25,000,000-and in that amount I include the votes for the various buildings and the votes made available for national defence through the supplementary estimates-all representing a substantial increase over the vote of last year. It seems to me that this should be subjected to the most rigid scrutiny. The minister has said that this appropriation is for purposes of defence, but I may say in this house-and my opinion is corroborated by many men with expert training in military matters-that this is simply a \$25,000,000 cardboard front as far as defence purposes are concerned, a cardboard front behind which there operates to a large extent a social patronage racket. When we come to aviation we find that civil aviation is sacrificed to the military branch, which is not competent to any degree to assume responsibility for the technical training of young men, and so far there has been no indication from the minister that the department is prepared to undertake technical training of the nature required. Surely any military expert will agree that under present conditions there is nothing more urgent than technical training, from the standpoint of defence, if the nation desires defence. Supply-Defence-Civil Aviation In the various aviation clubs across Canada we have a very efficient organization. The young men associated in these clubs, the minister will agree, are making a notable contribution to the development of aviation in Canada. Much of the important research work which is necessary is being conducted under the auspices of this organization, and as far as I can discover it is the one agency by means of which young men may find some opportunity to secure technical training and to keep abreast of developments in aviation in the world to-day. They are eagerly and enthusiastically taking advantage of that opportunity as far as they are permitted. From my personal experience the majority of the instructors attached to the flying clubs are rendering the country admirable service and doing whatever is possible, under the serious handicaps from which they suffer, to promote aviation in the way in which it should be promoted having regard to the development of our country. In connection with the purchase of equipment I wish to bring to the attention of the minister the fact that the general staff of the department who decide this matter are apparently palming off on our flying clubs equipment that is so obsolete that if they accept it at the present time, under the regulations, as I understand, for at least three years they cannot possibly secure access to modern equipment or obtain instruction in blind flying and in the latest aids to aerial navigation which are now being brought out. This is a policy radically different from that which has been sponsored by the British air ministry. Let me refer again to this particular purchase of equipment indicated in the return I mentioned previously. These planes are described in an article in the current issue of *Cavalcade*. The eight planes are Avro Avians with Genet-Major engines: A type of light aeroplane that has not been built in Canada since 1929. Their motors are five cylinder 100-110 horsepower. Their speed is only 100 m.p.h. Their carrying capacity is 458 pounds. Three years ago the last Mark IV Avians were washed out as obsolete by the Royal Canadian Air Force. This year the government of Canada has bought eight of the machines for issue to civilian flying clubs and paid \$3,498 apiece for them. The Ottawa Car Manufacturing Company was the vendor. No tenders were asked. The Hon. T. P. Ahearn, who contributed substantially to the victory of

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<sup>221</sup> [http://www.lipad.ca/search/?q=airworthiness&pol=&par=&sd\\_year=1917&sd\\_month=1&sd\\_day=1&ed\\_year=1950&ed\\_month=12&ed\\_day=31&sb=on&so=on](http://www.lipad.ca/search/?q=airworthiness&pol=&par=&sd_year=1917&sd_month=1&sd_day=1&ed_year=1950&ed_month=12&ed_day=31&sb=on&so=on)

## Notes on "Civil Aviation"

Liberalism, is president of the Ottawa Car Manufacturing Company. I am not at the moment particularly interested in that angle, but I have before me an advertisement which appeared in the issue of March, 1933, of Canadian Aviation, and in which these same Avro Avians, I understand, were advertised at "a new low price record." The advertisement reads: The Avro Avian can now be purchased on the deferred payment plan and offers a saving to prospective aircraft owners never before equalled. Fifteen hundred dollars cash payment and you can own a new Avro Avian with Armstrong-Siddeley Genet-Major engine, 100110 h.p. The balance you "pay as you fly" in twelve monthly instalments of \$140 each. The advertisement goes on to say that these planes are "completely modified." In every respect the purchaser of an Avian is the owner of one of the most up to date, Canadian-built, light aeroplanes suitable for training, sport and commercial use. Write for further particulars. Sole Canadian manufacturing and selling rights, Ottawa Car Manufacturing Co. Ltd., Ottawa, Canada. The government paid the sum of \$3,498. That, I submit, is not giving civil aviation the encouragement it deserves, particularly in view of the splendid record established in this branch by young men attached to flying clubs in this country. I feel that the government made a decidedly bad bargain. These machines were listed at a lower price in 1933 and intervening years. Surely they have not appreciated in value since that time. It is unquestionable that they are hopelessly outdated for purposes of aviation instruction at the present time; that they are obsolete from every point of view for such uses. Furthermore, the safety factor enters in, for if these machines have been in the stock of the Ottawa Car Manufacturing Company for seven, eight or nine years, having been purchased in the boom years when it was anticipated that there would be a remarkable development of aviation, it stands to reason that the wooden struts and the fabric in these machines must have deteriorated, and not even the most rigid inspection under the auspices of government inspectors can guarantee that they are airworthy for purposes of instruction. After all, machines used for these purposes stand considerable rough usage. The point I particularly wish to stress is that these machines are obsolete, and in providing them for flying clubs-and there is no indication in the return tabled 'by the minister that anything but obsolete machines will be furnished to the flying clubs-the department is seriously handicapping this work. It is of little advantage to this country to vote large sums of money for the development of flying fields if the young men who are interested in the technical development of the industry are in this manner precluded from keeping abreast of modern technical requirements. Supply-Defence-Civil Aviation.

July 1936 : "Air Defence" of Great Britain is replaced by 4 functional commands:  
Fighter (including Army Cooperation and Observer Corps),  
Bomber,  
Coastal (responsible for all land-based maritime aircraft and flying boat stations)  
Training.

July 1936 : plans were made to re-equip the RAF: in addition to the new fighters already mentioned, shadow factory "scheme" (Programme) was inaugurated whereby the leading car-makers set up huge assembly plants for the production of aircraft and aero engines.

July 1936 : British Air Staff issue specification for a long-range heavy bomber resulting in the 4-engined heavies of Bomber Command during the Second World War.

July 1936 : England : against considerable opposition - three new commands were added to the RAF - Balloon, Maintenance and Reserve.

July - August 1936 : Prime Minister King decides RCAF to become Canada's first line of defence. RCAF is commanded by the chief of staff, Canadian Army.

1936 : Prime Minister King organises a Cabinet Defence Committee to co-ordinate and define government's policies.

- A. William Lyon Mackenzie King - Prime Minister;
- B. Ernest Lapointe - minister of Justice ?
- C. Ernest Lapointe - prime minister's Quebec lieutenant;
- D. Charles Dunning - Minister of Finance;
- E. Ian Mackenzie - Minister of National Defence..

August 1936 : Cabinet Defence Committee 1st meeting :

- A. Cabinet Defence Committee examines reports prepared by Canadian armed forces experts.

## Notes on "Civil Aviation"

- B. The news was bad and the deficiencies were many.
- C. Cabinet Defence Committee Cabinet therefore decided to embark on an aircraft and aviation equipment modernization program (was this civil or service?)
- D. Canada's financial resources extremely limited.
- E. Canadian government cannot afford to purchase as much equipment as the Department of National Defence (dnd) recommended,
- F. King thereupon began to take an increasing interest in the potential importance of the Royal Canadian Air Force (rcaf) for "the defence of the country".

September 1936 : Cabinet in Ottawa allocates approx \$75 million for a five-year rearmament program to build 23 RCAF squadrons. (twelve non-permanent squadrons equipped with advanced training aircraft and eleven permanent squadrons equipped with combat aircraft)

October 1936 : Canadian prime minister, William Lyon Mackenzie King meets with British Conservative prime minister, Stanley Baldwin. During this meeting PM Baldwin suggests PM King focus primarily upon military aviation for the future.

02 November 1936 : The "Department of Transport Act, 1936 item No. 5 is implemented in Canada. This results in the following changes to the structure of Canadian Civil Aviation regulation.

1. The Control and Supervision of the Civil Aviation Branch of the Canadian Department of National Defence is transferred from the Minister of National Defence to the Minister of Transport.
2. The Civil Aviation Branch of the Canadian Department of National Defence is transferred to the Canadian Department of Transport

The Air Regulations, 1938 Part I Short Title and Interpretation (p) contained the following definition of "Air Engineer": - "Air Engineer : means a person who is the holder of an Air Engineer's Certificate issued by the Minister authorising him to act as therein specified"

The "FORMS" section of the Air Regulations identify form no. 2400 as the "Application for an Air Engineer's Certificate".

31 December 1936 : Licensed Air Engineers in Canada ??? source ref :

31 December 1937 : Licensed Air Engineers in Canada 595 source ref : pg 266 "The Engineering Journal" May 1943

31 December 1938 : Licensed Air Engineers in Canada 643 source ref : pg 266 "The Engineering Journal" May 1943

31 December 1939 : Licensed Air Engineers in Canada 722 source ref : pg 266 "The Engineering Journal" May 1943

31 December 1940 : Licensed Air Engineers in Canada 822 source ref : pg 266 "The Engineering Journal" May 1943

31 December 1941 : Licensed Air Engineers in Canada 832 source ref : pg 266 "The Engineering Journal" May 1943

31 December 1932 : Licensed Air Engineers in Canada 944 source ref : pg 266 "The Engineering Journal" May 1943

## CANADIAN AVIATION - 1937

January 11937 : Aero Digest : CANADA

Airplanes are selling in larger numbers in Canada this year, according to the deHavilland Co., at Toronto, which reports early in

May the sale of 4 five-passenger Dragon Rapides to the Royal Canadian Mounted Police for patrol work on the Atlantic and Pacific

coasts, and 20 trainers to the Royal Canadian Air Force. The company now has twice the number of orders that it had during the similar period last year.

The Department of Transport has appointed 4 new assistant inspectors to the Civil Aviation Branch, bringing the total of inspectors and assistants to 22. The new appointees are K. F. Saunders, who will be stationed at Rimouski on the St. Lawrence; Donald Saunders, F. M. Carter, and G. C. Upson.

Figures just released by the Department of Transport show that Canada carried 1,159,834 lbs. of mail in 1936, a new record. This mail was carried on routes into regions served by no other mail transport, and a few intercity runs.

At the same time the Department reports that there were at the end of the year,

559 active private pilot licenses,

380 commercial pilot licenses,

65 limited commercial pilot licenses,

42 Air transport pilot licenses, and

533 air engineer certificates.

There were 43 private planes, 402 commercial planes, and 98 airports.

Airplane clubs during 1936 had a membership of 2492 and used 66 planes; 645 members were under instruction.

Club planes flew 17,324 hours and the 22 clubs trained 210 new private pilots and 34 commercial pilots, during the year.

Two new air mail routes were scheduled to start the end of May, the first from Prince George, B. C. to Takla Landing in northern British Columbia, and the second from Prince George to Fort Grahame, in the northeastern section of British Columbia.

These will be monthly flights to new mining camps and fur posts.

James Lytell Memorial Trophy, emblematic of the flying championship of the Montreal Light Aeroplane Club was presented to Dean Nesbitt by Air Vice-Marshal W. A. Bishop, V.C. Second prize was presented to Don Thompson by Dr. D. B. Mowry, president of the club, and third prize to Alec Graydon.

An aviation section at Halifax is being created in the Royal Canadian Mounted Police. Four planes are already available, each manned by a pilot and observer.

For some time the Mounted Police have been operating an air patrol on the Atlantic coast, but its personnel were officers and mechanics from the Royal Canadian Air Force. The new service will be administered and manned by the R. C. M. P. themselves.

A new flying service between Montreal and the northern Quebec mining fields, to be operated by Jack Moar to link this region with similar daily service to the mining areas of Ontario and Manitoba from Toronto and Winnipeg, is an expansion in operations of Skylines Express, Ltd., which is serving northern mining areas.

Five new twin-engined airliners will be used. The planes, now being built by Fairchild Aircraft, Ltd., will cruise about 180 mph. and will be especially designed for service in the territory over which they are to fly. Standard equipment will include floats, in summer and skis for winter flying, with wheels also optional. The aircraft will be equipped with two-way radio.

Total income of Mackenzie Air Service, Ltd. in 1936 improved to \$134,050 from \$109,784 in 1935, and \$118,734 in 1934.

Expenses were lowered and net income transferred to earned surplus after deduction of income taxes amounted to \$36,244



## Notes on "Civil Aviation"

against \$667 in 1935. Earnings equal 23.9 cents a share on the 151,500 shares of stock outstanding, before the recent public offering of 140,000 shares. On the basis of the 291,500 shares now outstanding, earnings would have equalled 12.4 cents a share. The company owns a joint interest in United Air Services, Ltd., along with Wings, Ltd. and General Airways', Ltd.  
Source \_ Aero Digest 1937 December

Canadian Airways recently took delivery of a Norduyn Norseman, Canadian-designed freight plane built at Montreal. The ship is being used on the Mackenzie River system, and is equipped with large doors to facilitate loading of bulky freight. When not used as a freighter, it carries eight passengers and two pilots.

Canadian Airways, Ltd., reports that 604,403 miles were flown from Sioux Lookout, Collins and Kenora from January 1 to freeze-up, during which period, 6912 passengers were carried as well as 4,876,899 lbs. of express. Pilots logged 6532 hours.

Mail service into remote northern British Columbia starts about January 10 between Ft. St. John via Gold Bar and Finlay Forks to Ft. Grahame, and from Ft. St. John to Nelson. Service will be operated by United Air Transport, Edmonton operator which will make 8 trips per year on the first route and 4 trips on the second. Formerly these outposts received mail once a year at best.

CANADIAN CAR & FOUNDRY COMPANY, LTD. MONTREAL, CANADA New York Office: 570 Lexington Avenue, N.Y.C.

After several years of expanding air mail services into the isolated northland, the Canadian Post Office Department announces that it has found it cheaper to use air mail than dog team mail services. Half the revenue from air mail services into the northland are profit for the government, being above the cost of air transportation. With similar loads of mail going by dog team, it is estimated the post office would be out \$100,000 more each year than the total revenue of the air mail service. A new high was established in air mail poundage in 1936, with 1,250,000 lbs. carried, according to preliminary figures. Nine new services were inaugurated during the year into the remote regions. Mining activity has been the principal reason for inauguration of new services and additional flights on existing routes.

Wings, Ltd., with a fleet of eleven planes, flew 770 tons of express and 6670 passengers in the first six months of 1936 as against 1000 tons of express and 7765 passengers in the entire previous year. The company showed a net profit of \$51,509 for the six months, as against a loss of \$11,309 in the previous year, M. E. Ashton, general manager stated. Stockholders approved a capital increase of 200,000 shares.

England's supply of Champion aircraft and automotive spark plugs will be filled by the output of a new \$500,000 factory located at Middlesex near London, England. The factory will be a one-story unit covering 33,000 sq. ft. of floor space and will meet the supply formerly filled from the Champion Canadian plant in Windsor, Ont.

TO CANADIANS ONLY: Commercial pilot, air engineer, 700 hours, desires position; or will buy suitable aircraft; or enter partnership, or what have you? Ed Fletcher, 52 Donald St., Winnipeg Canada

Grumman Aircraft Eng. Corp. Fanningdale. New York  
L. R. Grumman, pres. ;  
L. A. Swirbul, vice-pres. ;

## Notes on "Civil Aviation"

Wm. T. Schwendler, chief eng.

Export representatives :

Canadian Car & Foundry Co., Inc., 240 Park Ave., N.Y., N.Y.C also licensee) ;

Gillies Aviation Corp., Hicksville. N. Y

TRANS-CANADIAN AIRWAY - article by JAMES MONTAGNES : After building a chain of emergency landing fields in the un-inhabited bush regions of northern Ontario, Canada opens its much heralded northern trans-continental airway on July 1. Linking

Halifax with Vancouver in 16 to 18 hours, Europe- and Asia-bound mails will travel in new Douglas transports, six of which it is understood, have been ordered by the Canadian government for the new service. The new airway was designed not only to speed domestic mails but also as a vital link in the British Empire air service.

The Canadian government has gone to great detail in establishing a ground system of safety aids, which include a series of more than 25 four-way radio directional compasses, built and designed in the Dominion. These stations will give four bearings simultaneously, one in each sector, and neither pair of which need be direct opposites, thus giving four distinctly different bearings.

In the Rocky Mountain sector of the route, special radio beacons have been installed to overcome difficulties found to result from the surrounding high peaks. The mountain route is through Crow's Nest Pass, the lowest pass on the route to Vancouver among mountains more than 9000 ft. above sea level.

**Ground operations** of the airway **will** be carried out **by the Air Service Branch of the Dominion Department of Transport**, and includes (besides the radio beam stations) marker radio beacons, the latest in floodlighting, boundary lights, and searchlights on all main and emergency landing fields. A teletype weather service with hundreds of weather observation stations sending in data is ready to start operations.

Close to \$10,000,000 will have been invested by the government on the ground and safety system when the airway opens for mail traffic this summer.

The route will be from Halifax to St. John across the state of Maine, to Montreal, where the trans-Atlantic and United States routes connect. From Montreal via Ottawa, Elmsdale, Cobalt across northern Ontario to Winnipeg, Regina, Lethbridge, Cranbrook, Princeton to Vancouver. United States lines connect at Winnipeg and Vancouver. Arctic routes connect at Winnipeg and Lethbridge.

A difficulty on the route was the bridging of northern Ontario, where virgin forests, lakes and a trans-continental railway right of way are the only landmarks. This northern route (instead of the Lake Superior crossing) was chosen because it is comparatively free of fog. It required the clearing of 30 fields from virgin forest, dynamiting stumps, taking out rocks and boulders and filling in muskeg. Telephones now link these northern fields.

The airway will operate for the first year with mail and express.

Passengers are not expected to be carried for some time, but may be flown on limited sections. ***The airline will be a private company with railway and Canadian government financial interest.***

When the service gets under way, the transports will leave Montreal with mail about 6 p.m. and be in Vancouver in time for delivery of mail the next afternoon, Hon. J. C. Elliott, Post-master General told the House of Commons during consideration of post-office estimates.

The schedule will be so arranged that the 3000-mile route will be flown in the night, with the exception of the hop through the Rockies.

Canadian government's estimates for the year 1937-38 includes \$11,752,650 for aviation, a sizeable increase over 1936. Part of the increase is due to new defense expenditures, which include the purchase of 12 fighters, 3 army-cooperation, 7 flying boats, 24 bombers, 11 torpedo bombers, 18 coastal reconnaissance planes and 27 trainers. The R.C.A.F. is to be increased by 48 officers and 565 men, bringing the permanent force to about 1700. The non-permanent force is also to be increased to make a total of 1075.

Expenditures for civil aviation now come under the Department of Transport.

The Toronto Flying Club's new officers elected at the annual meet-

## Notes on "Civil Aviation"

ing early last month are: Sidney B. Cleverley, pres. ; W. M. Alexander, vice-pres. ; J. O. Shaughnessey, sec, and J. M. Burgess, R. E. H. Bowman, T. R. Loudon and H. R. Bertram, directors.

General Airways, Ltd., Wings Ltd., and Mackenzie Air Service, Ltd., are being amalgamated and will be known as United Air Services. These companies have all been active in flying passengers, freight and express to mining districts from eastern Quebec to the Pacific coast Combined they have 26 planes as well as radio stations, and they will continue under their present individual managements. The purpose of the amalgamation is to effect a saving by the joint purchase of planes, equipment and supplies.

deHavilland Aircraft Company of Canada, Ltd., in its statement for the fiscal year ending September 30, 1936, reports sales reduced from \$160,275 a year ago to \$155,942, a small reduction in gross profits from \$21,954 to \$21,247 and a decrease in the deficit carried forward from \$30,683 to \$28,000.

Relics of the earliest developments in Canadian aviation are now being preserved, and the story of Canada's part in the progress of aviation will be told in a collection now being assembled for the newly established aeronautical museum housed in the building of the National Research Council in Ottawa.

Fleet Aircraft Corp., Fort Erie, Ont., received an order for 20 training planes from Argentina. According to J. W. Sanderson, general manager, the planes will cost about \$100,000. This is the first order for training planes which the new Ontario Fleet plant received from a country in South America.

A three- to four-month trip to Central and South American countries has been undertaken by Lieut. Howard F. Klein who is piloting a Canadian Grumman two-place fighter on a good will and sales demonstration tour. Frank Ambrose is accompanying Lieut. Klein as co-pilot and radio operator.

The plane is the standard U. S. Navy carrier type recently released for export by the U. S. Government. However, Canadian Car & Foundry Co., Ltd., licensee in Canada, have installed flaps which are not included in the regular Navy job. Power is supplied by a 750 hp Wright Cyclone equipped with a Hamilton Standard controllable pitch propeller. Included in the equipment being carried by Lieut. Klein is a two- way radio, the Coffman cartridge type engine starter.

No speed records will be attempted during the trip, inasmuch as it is intended to give ample time to various government officials who desire to inspect and test the plane. Canadian Grumman fighter powered by a 750 hp Wright Cyclone

**Ocean Service :** As the result of negotiations with the Canadian Government, the final diplomatic obstacle to joint operation of a "Trans-Atlantic" air-line by British (Imperial Airways) and American (Pan-American Airlines) companies has been removed. ***A final proposal in connection with the location of terminals on this side of the Atlantic has been approved by the Canadian Government and an agreement has been reached by Canada, the United States and Great Britain which provides for reciprocal operation of aircraft involved over their respective territories as well as the reciprocal use of terminals,*** with New York the western terminus.

Bids will soon be considered by the "Post Office Department" for the transport of mail over the Atlantic, and, as a final preliminary to a service which calls for four trans-oceanic flights a week, the first test flights will be made.

The plan provides for alternate trans-atlantic mail service in the Winter months by way of Bermuda and the Azores. Pan-American Airways and Imperial Airways have obtained a concession ***for the next 25 years*** from Portugal for stations in the Azores and at Lisbon. Both Imperial Airways and Pan American plan to use this route in certain seasons until equipment has been perfected for all-weather sub-stratosphere flying over the northern route. (Quantas and Imperial Airways have a similar agreement with the USA and Canada for the Trans-Pacific mail service)

To provide Canada with trans-continental air mail, express and passenger service ***which will connect with the Trans-Atlantic air mail service*** , a "Trans-Canada" Air-Line ***will be organized by the Dominion Government*** with capitalization of \$5,000,000 divided into \$100 shares ( 50,000 shares) ***underwritten by the Canadian National Railway System.*** The proposed company, ***a private corporation,*** would be given exclusive contracts to carry mail, passengers and express. At first ***the company will be subsidized for two years,*** at the end of which time it is expected an efficient service will be operating.

## Notes on "Civil Aviation"

For purposes of organization of the "Trans-Canada" Air-Line, a number of officials of the Department of Transport are selected to act as "incorporators". They are:-

Col. V. I. Smart, Deputy Minister of Transport (C.D Howe is Minister of Transport);  
R. K. Smith, Director of the Marine Branch, Department of Transport;  
Commander C. P. Edwards, Director of the Department of Transport's "Air Service";  
E. B. Jost, General Superintendent of Canals ; and  
F. M. Mac-Lennan.

Source ref : Aero Digest January 1937 Volume 30 Number 1, Aeronautical Digest Publishing Corp., at 515 Madison Ave., New York, N. Y.

30 July 1937 : Trans-Canada flight of FC-CCT carrying DOT and CNR officials:

1. D.W Saunders
2. L. Parmenter, engineer
3. FI Banghart Airport Mgr.
4. W.H Hobbs Secretary of TCA and CNR
5. H.J Symington member TCA & CNR B.O.D
6. C.D Howe, Minister of Transport
7. Sqn.Ldr J.H Tudhope Chief Pilot
8. Lt.-Cmndr Charles Peter Edwards, RCN - chief of the D.O.T Air Service 1927 / Dept. of Marine and Fisheries 1925 / Deputy Minister of Transport 1941 - 1948 / Deputy minister for Air 1948 - (Naval Officer in the Royal Canadian Navy during the First World War - Was Director of the Canadian Government Radio Branch in 1921 - in 1939 He ordered all Ham Operators to dismantle and render inoperative all radio equipment.)
9. J.D Hunter, co-pilot
10. John A. Wilson Controller of Civil Aviation
11. George Wakeman divisional inspector, D.O.T Air Services
12. D.R MacLaren TCA



## Notes on "Civil Aviation"

Lancaster long range transport Lancaster XPP variant registered CF-CMT is first flown by E.H. Taylor on 9 September, 1943; went into service with Canadian Government Trans-Atlantic Air Service (CGTAS) for mail and VIP service between Dorval and Preswick. The Lancaster XPP carried ten passengers and crossed the Atlantic in about twelve and half-hours

May 1938 : Laurentian retains all but 1.54 acres of its' Uplands, Ottawa property - The airport is sold by Uplands Ltd to the Canadian Government for the sum of \$37,500 - the amount offered by Colonel V.I. Smart on March 15th. The Canadian Government was soon building 2x 200'x3000' runways with ground facilities which officially opened in August 1938.

Postal rates will be fixed from year to year on the basis that if there is a deficit the first year the rates will be increased the next year to an extent estimated to produce sufficient revenue to meet the deficit. If there is a surplus the rates will be reduced, providing they will not be lower than competitive rates.

1937 : Canadian Government Budget : Designed to encourage airplane production in Canada, the 1937- 38 budget of the Canadian government provides for a 60% drawback allowed on materials, including all parts, imported for use exclusively in the equipment

of aircraft. The same drawback is to apply to parts for the assembly in Canada of engines Formerly a drawback was allowed only for parts used in the manufacture of engines. The change allows their assembly in the Dominion, and the duty for the importation of complete airplanes remains.

In recognition of his contribution to the advancement of aeronautics during 1936, Matt Berry, pilot for Canadian Airways, Ltd., received the McKee Trophy which was presented by Air Vice-Marshal W. A. Bishop, V. C, at the annual convention of the Canadian Institute of Mining & Metallurgy.

A record round- trip flight of 1006 miles "from Rimouski n to Harrington Island on the north shore of the Gulf of St. Lawrence " was made in 8 hrs. and 5 min. by a Canadian Airways plane piloted by V. J. Hatton. More than 800 lbs. of mail and several passengers were flown on the trip. This marked the first time since the inauguration of mail flights along the north shore that the round-trip was made the same day.

United Air Transport, Ltd., of Edmonton has secured a temporary contract to carry ordinary first class mail (up to 600 lbs.) on one round-trip a week basis between Edmonton, Peace River and Grand Prairie, Alberta and Dawson Creek and Ft. St. John, B. C. The round-trip distance is about 1000 miles.

Canadian Car & Foundry, Ltd., Montreal, Canada has taken over the manufacturing rights to the Burnelli UB-14 twin-engined transport airplane, and are expected to prepare for its production in the near future. The Burnelli is adaptable for seaplane use being easily convertible for water operations and can be fitted out as a cargo carrier for operations in Canada where more freight is carried than in any other country.

THE BURNELLI type of transport "introducing new standards of efficiency and safety" will soon be available for **British Empire** service, following the acquisition of manufacturing rights **by this organization**. The lifting fuselage consolidates detached units and supports 25% of the gross weight. Greater safety is derived from the structural arrangement in which the cabin section is protected by approximately 60% of the total structure of the airplane, with powerplant forward. Additional advantages include the reduction of turning moment for single engine operation; accessibility of powerplant and landing gear in flight; large cargo space, and adaptability to seaplane conversion. Of sturdy yet simple construction, the Burnetii sells for less than comparative conventional types.

Canadian Car & Foundry also offers for export the famous Grumman two-seater fighter, now available as a convertible advanced trainer with pursuit performance; and the CCFN-I, sturdy primary trainer. CANADIAN CAR & FOUNDRY COMPANY, LTD. MONTREAL, CANADA

Non-stop 1 hr. 59 min. service is now offered between New York and Montreal, Canada, by Canadian-Colonial Airways. The new service is operated by American Airlines, Inc., under contract with the Canadian company and places in international operation 21 passenger Douglas Flagships.

## Notes on "Civil Aviation"

Lower Fares : Uniformity in US airline fares on coast-to-coast and inter-city service has been achieved. United Air Lines and American Airlines have reduced their fares between New York and Chicago and between both coasts, charges now being \$44.95 and \$149.95 respectively. TWA recently adjusted its fares to conform to the new rate structure

and in the USA : Aeronautical Engineering Degree - in 2 years : Become an Aeronautical Engineer. Tri-State College course given in 108 Weeks. Bachelor of Science degree. Graduates in Mechanical Engineering can complete aeronautical course in 2 terms (24 weeks). Thorough training in all fundamental engineering subjects. Equipped with wind-tunnel (see Illustration). Non-essentials eliminated. Courses designed to save student time and money. Flying school facilities available at nearby airports. Properly trained engineers in design, research, manufacture and sales work are in demand. Enter September, January, March, June. Courses are offered also in Civil, Electrical, Mechanical, Chemical, Radio Engineering ; Business Administration and Accounting. Living costs and tuition low. Those who lack high school may make up work. World famous for technical 2-year courses. Graduates successful. Write for catalog. 1017 COLLEGE AVE., ANGOLA, 1 N D. TRI-STATE COLLEGE

in 1936 \$581,919 worth of American aeronautical products were exported to Canada. The value of aeronautical products exported from the United States from 01 Jan 1936 through October 1936 was more than 50% ahead of that for the same 1935 period and almost 28% better than the full year 1935. During the first ten months of 1936, the USA exported: 403 aircraft valued at US \$8,786,326; 727 engines valued at US \$4,128,444 ; \$266,794 worth of parachutes, and \$5,089,513 worth of parts and accessories, bringing the total to \$18,271,077 not including exports to US non-contiguous territories which raised the total to \$18,551,361. This compares with \$12,221,302 for the first ten months of 1935.

February 1937 : London, UK : The Air Registration Board, set up - The Air Board:

1. is to undertake such functions in connection with
  1. design,
  2. construction and
  3. maintenance of civil aircraftas *may be delegated to it* by the Minister of Civil Aviation.
2. is responsible for the *issue* of Certificates of Airworthiness to all British civil aircraft.

23 February 1937 : Parliament, Ottawa **Topic:** DEPARTMENT OF NATIONAL DEFENCE - Supply-Defence-Air Force  
Abraham Albert Heaps Co-operative Commonwealth Federation (C.C.F.) : Would the minister tell the committee the number of machines the government has in service in the air defence of Canada?

Ian Alistair Mackenzie (Minister of National Defence) Liberal : At the present time the total in Canada is 182 aeroplanes. There are 8 fighter Siskins now obsolete; 18 army cooperation of which 15 Atlas, now practically obsolete, and 3 Avro No. 626 ; 4 Vancouver flying boats, which are obsolescent; 7 new torpedo bombing Blackburn "Sharks," only 4 of which have been delivered so far, but which are modern service planes; 105 various types of training planes, many obsolete, and 40 transportation planes of different types used on various government services, particularly civil government air operations, making a total of 182. The present estimate provides for an increase of 102 planes, as follows: 12 fighter planes, 3 army cooperation planes, 7 flying boats, 24 bomber planes, of which 18 are used Wapiti planes, and 6 new Avro No. 626, 11 torpedo bombing planes, 18 coastal reconnaissance planes, and 27 training planes.

Abraham Albert Heaps : How many aeroplanes has the minister purchased since assuming office?

Ian Alistair Mackenzie : Since April 1, 1934, the following were ordered: October 3, 1934, 10 Atlas airframes from the air ministry; on May 27, 1935, 10 Civet Fleet airframes; on November 18, 1935, 6 Wapiti airframes, from the air ministry; on November 28, 1936, 5 Stranraer aeroplanes, from Canadian Vickers; on September 22, 1936, 10 Fleet trainer airframes; on May 11, 1936, 1 Avro tudor aeroplane, from Armstrong Siddeley; on May 4, 1936, 7 Torpedo "Shark" aeroplanes, from the air ministry; on August 29, 1935, 3 Avro type "626" aeroplanes, from Armstrong Siddeley; on August 23, 1935, 3 Northrop Delta aeroplanes, from Canadian Vickers, for civil government air operations; on August 9, 1935, 2 super-71 Fairchild aeroplanes, from the Canadian Wright Company, and on January 11, 1937, 4 Northrop Delta aeroplanes for civil government operations.

Abraham Albert Heaps : How many of these machines are now being operated by the government?



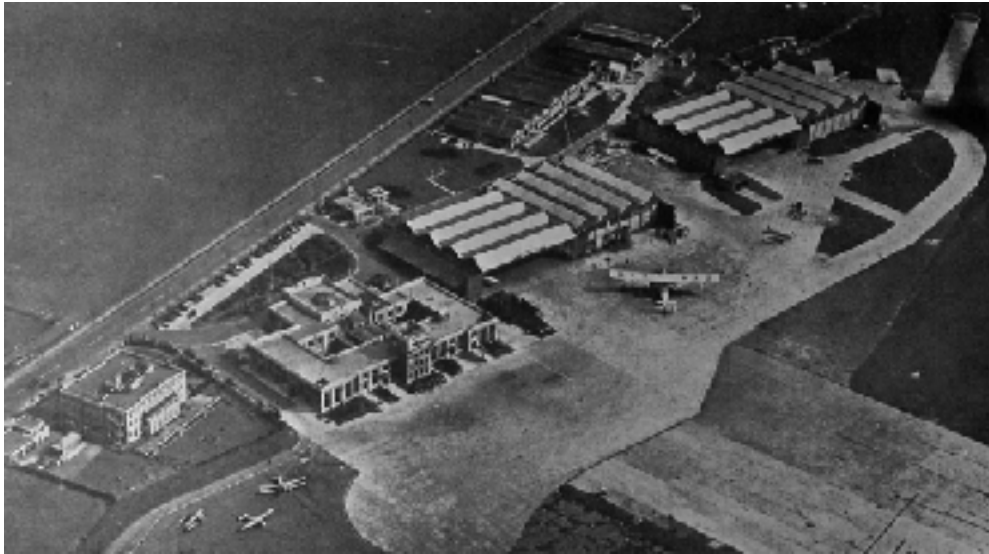
## Notes on "Civil Aviation"

Ian Alistair Mackenzie : All the planes as required and suitable, namely 182 of them; but few are modern service planes

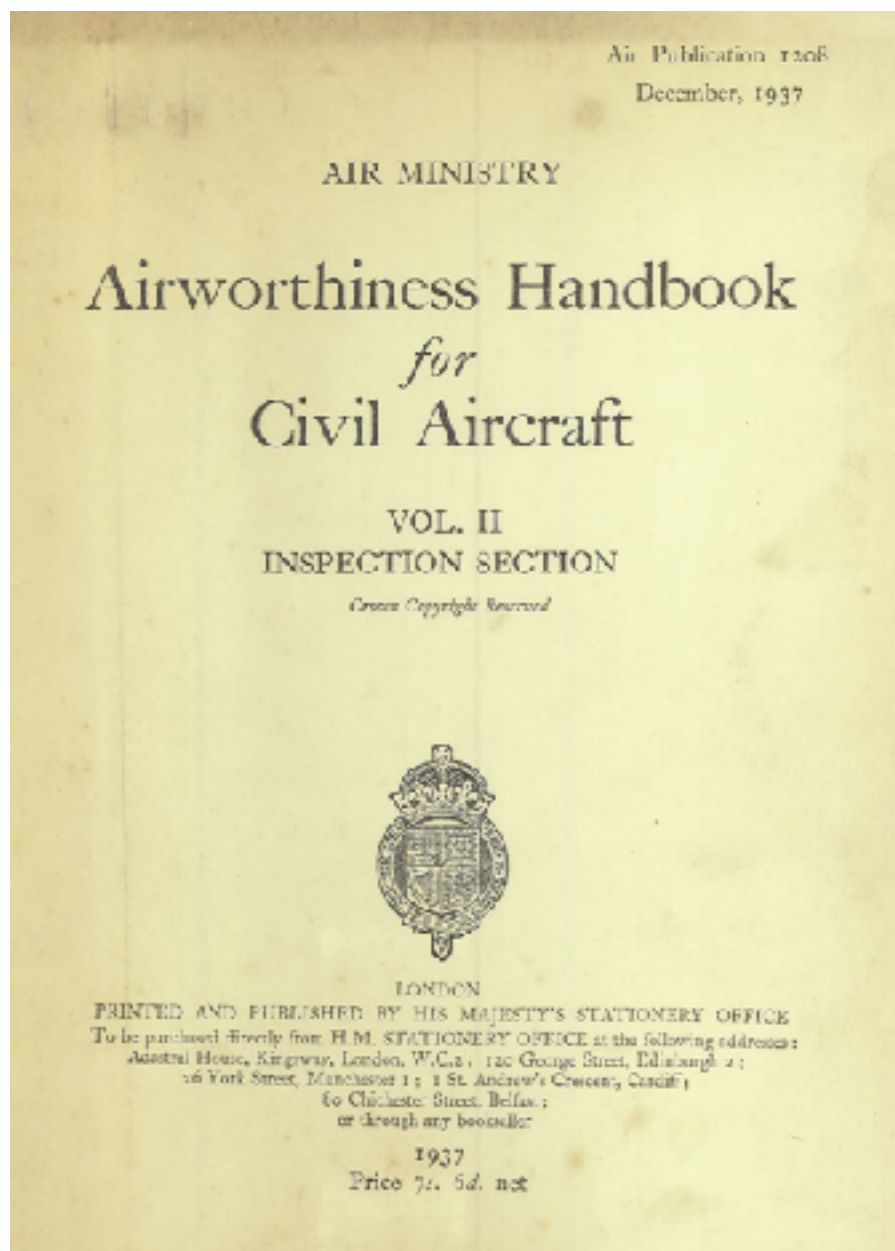
Abraham Albert Heaps : Are any under repair?

Ian Alistair Mackenzie : Inevitably there are always some under repair. [...] machines were pronounced airworthy by inspectors whose duty it is to inspect them.

Ian Alistair Mackenzie : With regard to service planes, *technical officers in the air service consult with officials of the air ministry in England* and endeavour, generally, to have the same type of machines as is recommended by those officials. *I have here the recommendations of the [British] air ministry with reference to all the modern service planes which recently have been ordered in Canada.*



Croyden - London UK airfield circa 1937





## Notes on "Civil Aviation"

1937 : RAF Flight Lieutenant Adam reaches a height of 53,937 feet in the Bristol 138 high altitude monoplane after modification and improvement to both aircraft and pressurization suit.

1937 : control of the Royal Navy Fleet Air Arm is transferred to the British Admiralty, laying the foundation for the mutually successful partnership between the Royal Navy and RAF Coastal Command during WW2.

12 March 1937 : Frank Whittle [incorporation in March 1936 of Power Jets, Limited - Power Jets placed orders with the B. T-H (British Thompson-Houston) Company to provide design drawings of an experimental engine based on requirements Whittle had laid down at Cambridge to manufacture parts, and to make facilities available for testing, all on a cost-plus basis. B. T-H had been selected because it had experience supplying industrial turbines and compressors. It soon became clear that this background was not relevant to aircraft engines. Whittle rejected B. T-H's first design and then gave B. T-H a preliminary design to use. Despite many procurement difficulties, and the fact that neither the turbine nor the compressor had been run as an individual component, the first run of the engine was self-sustaining on March 12, 1937. June 30, 1939, Power Jets demonstrated to the ministry's director of scientific research a twenty-minute engine run up to 94 percent of design speed. This one demonstration led the director to conclude they now had the basis for an aero-engine. The ministry agreed to pick up the costs of parts for the experimental engine and gave Power Jets a contract for a flight test engine that was subcontracted to B. T-H. The ministry also contracted with Gloster Aircraft for an experimental aircraft, the E. 28/29. The W. 1 experimental flight test engine powered the first British jet flight successfully on May 15, 1941. By the end of 1940, before the E. 28/29 had flown, the Air Ministry decided to have the W. 2, a higher thrust engine, developed and produced to power a twin-engine jet fighter, the F9/40 *Meteor*. In October 1941, the U. S. Army Air Corps delivered a W. 1x engine, the W. 2b drawings, and a team of three from Power Jets Ltd. to the General Electric Company. This was the beginning of turbojet development in the United States. Knited in 1948, At age seventy, Frank Whittle would still confound younger engineers, who were apt to solve their aerodynamics problems on multimillion-dollar computers, by quickly getting useful results on the back of an envelope using his 5-inch slide rule. He closed his colorful career in the position of research professor at the U. S. Naval Academy. His textbook on gas turbine aerodynamics was published in 1981. source : [Memorial Tributes: National Academy of Engineering, Volume 10 \(2002\) Chapter: Frank Whittle: https://www.nap.edu/read/10403/chapter/47#255](https://www.nap.edu/read/10403/chapter/47#255) The National Accademies of Sciencees / Engineering / Medicine 500 Fifth St. N.W. | Washington, D.C. 20001]

21 March 1937 : UK HC : AIR SUPPLEMENTARY ESTIMATE, 1937. HC Deb 21 March 1938 vol 333 cc863-950 "Mr. Wedgwood Benn I beg to move, to leave out "83,000" and to insert "82,900."

My object in moving the reduction is to raise a discussion on various points, several partly arising out of the last Debate and others partly new points, to which I hope the Under-Secretary and the Noble Lord will be able to give a reply.

I do not intend to speak in any party sense. I regard the present situation as much too serious to allow us to indulge in any tilting, which is such a delightful occupation in this House.

We have to make our speeches upon information received.

Some of us have more and some have less information in our possession.

My first point is on the question of training.

Lord Trenchard said that the Air Force consisted of:

1. Engineering and
2. Flying

it was laid down by him many years ago that

1. all serving officers in the Air Force, however high their rank might be, ought to "understand engineering"—not to mean "engaging in engineering".
2. all serving officers in the Air Force, however high their rank might be, ought to understand the practice of flying.

I am told:

1. that this rule has gradually fallen into disuse.

## Notes on "Civil Aviation"

2. that practical flying and a knowledge of the technical side of flying among the higher ranks of the Air Force to-day is not at all what it should be, or
3. that practical flying and a knowledge of the technical side of flying among the higher ranks of the Air Force to-day is not at all what was laid down by Lord Trenchard's dictum. &
4. "The officer's task will be impossible unless the Navy is kept abreast of:
  1. the scientific progress of the age.
  2. the intellectual progress of the age.
  3. the physical progress of the age.
5. It is they themselves "The office" who must keep it there."
6. "The executive officer has been taught but a small amount of engineering, although the ship on which he is serving is a huge box of engines."

My points are:

1. whether the dictum of Lord Trenchard, about the necessary combination to produce a good Air officer with a practical knowledge of engineering and flying, is still holding the field in the higher ranks of the Air Service."
2. the failure of the Government to take the action which is recommended by the Cadman Committee in relation especially to the member of the Air Council responsible for production.
3. that the Minister for the Co-ordination of Defence [in his speech the other night] tried to meet this point by saying that "the Cadman Report was a report on civil aviation", whereas the point that I am raising is concerned with military aviation.
4. I do not think that the Cadman Report bears out the argument which was put forward by the Minister for Co-ordination of Defence.

The Cadman Report says:

"In our view the problem of the air is :

1. two sides of a single coin—and
2. the military aspect of aviation cannot fundamentally be separated from the civil aspect."
3. in dealing with the case of production:
  1. the Member of [the Air] council responsible under the existing organisation is a military officer.
  2. the Member of [the Air] council responsible under the existing organisation is appointed for a short period
  3. however distinguished an individual officer may be, the problems of aircraft production on a large scale are, with modern processes, so specialised that it is contrary to all sense to expect a military officer without previous knowledge and experience of such matters, and holding office for a limited term, to deal effectively with the situation.

That is what the Cadman Report says on the point. As I hope to show later, the enormous developments which must take place in the production of aircraft make that recommendation far more weighty even than it was at the time it was made.

The covering Memorandum, and the Minister for Co-ordination of Defence in dealing with this matter when it was debated in Committee, rejected the recommendation of the Cadman Report.

I think he was wrong.

I do not think his authority could possibly be set against the authority of the Cadman Committee.

I would press the Noble Lord or the Under-Secretary of State to deal with the point, because we are face to face with a very serious task.

It is not only a question of producing the sort of aeroplanes or the number of aeroplanes that we have been producing in the past.

It is unfortunately a question of multiplying our programme very greatly.

It is not to be supposed that a military officer who has been appointed for a short term and has no experience of anything of this kind, can possibly carry the responsibility of the enormously increased production that will be required.

According to the Minister, [The argument has been used] if we do not put a military officer at the head of the production department, the people in the squadrons will not have confidence; they will say:

1. Some manufacturer has invented this, and
2. it is not safe to buy it," but that

## Notes on "Civil Aviation"

3. if a serving officer were at the head of the production department, that would inspire confidence among the airmen.

There is something in the argument provided that the Air Council includes a flying officer in touch with engineering and with flying experience;

but:

1. if my first point is right, and
2. if appointments have become
  1. more a question of seniority and
  2. what is called the power of command.
3. then the confidence of the men who have to fly the machines will be shaken.

I am not sure that [in the past] the flying officer had quite that respect for the higher command [the higher command officers having both engineering understanding and flying ability] in these matters that perhaps they should have had.

In connection with this subject and some remarks made by the hon. Member for Mossley (Mr. Hopkinson) in our last Debate on the Estimates, I would call attention to some sentences in the report of the tragic court-martial on the loss of a Blenheim in an accident.

The hon. Member for Huntingdon (Dr. Peters) was defending the unfortunate pilot. Speaking about the Blenheim he said that it was the machine in which the Germans have a special interest. I believe it is the type of machine for which Lord Rothermere was originally responsible. The report states that the bomber

1. was sent to Ireland on a practice flight.
2. It got into difficulties and
3. came to grief.

The hon. Member for Hunting:  
defended the pilot,

questioned Squadron Leader Freebody as to whether the weather conditions were too severe. He asked: "Do you not think it was unwise to risk this flight?" The answer to that question was: "I do not agree."

The report goes on: "Dr. PETERS: But there was anxiety with regard to these aeroplanes in difficult weather?—  
WITNESS: Well, yes."

"Dr. PETERS: Was the squadron down in flying time, and did headquarters expect more to be done?—

WITNESS: Not more than we could do. It was understood that we could not fly a lot as we had not many machines."

Later, on the second day of the trial, there was the speech of Flight-Lieutenant Somerhaugh, who was acting as prosecutor, and it contained this sentence from an order relating to flying under which the first charge against the accused was made: "No excuse will be taken for disobedience of this order."

"That order," he said, "was not published in the book for fun. The Blenheim, until certain modifications were made, in the opinion of the authorities was hardly suitable for promiscuous flying."

I hope that the Under-Secretary will be able to reassure us on the point, because a war will not wait for the weather. It is disquieting to hear that a machine in which much pride is felt has failed in these circumstances.

**Mr. Benn** - "Air machines are like the top brick of a pyramid.

1. You have machines in the air and
2. below them your ground organisation,
3. below them your steel and material, and below them
4. the taxable capacity of the people.

You have many things to consider, but the Government ought to give us some assurance that judged by any yardstick we care to take, this parity is going to be secured.

In order to examine air power, you have to go into many other matters, and it is for that purpose that I propose to consider the German standard in the wider sense which the Prime Minister indicated. "

## Notes on "Civil Aviation"

Mr. Hopkinson's response: -

So far as my experience goes with:

1. commanding officers,
2. senior officers,
3. right to the very top of "the fighting side" [air crew] of the Royal Air Force.

there is a thorough realisation of the truth of the points which I have put before the House.

There is no suggestion [by the fliers] that they [apprentices] must have the cream of the best public schools. [actually that is exactly what the pre-entrance exams laid down by Trenchard did do!]

That [cream of the crop] idea [mentality or point of view re the Engineers] just does not exist [amongst the pilots] . [See trenchard memorandum]

Any young fellow who goes into the Air Force and is lucky enough to get a commission, whether permanent or temporary, will be judged as he is judged now on merit [originally this was a concept of academic achievement and also skill and capability, but by the early 30's the meaning to the pilots was "is he is liked and is he a kiss ass"], and merit alone. [to the pilots, the concept of doing anything but fly was firmly entrenched]

with regard to commissions given to the aircraftmen trained at the great school at Halton (No.1 School of Technical Training (Apprentices)) .

1. Halton has been run by a series of [Trenchard ?] enthusiasts who are very able men indeed.
2. It is a magnificent school, and
  1. the education which the boys get there is as good as they get at any of the best public schools in the country.
  2. the training which the boys get there is as good as they get at any of the best public schools in the country
3. The result is that a considerable proportion of the boys who pass out of Halton are really qualified to take commissions, and
4. some of the senior officer strongly feel that Halton boys ought to have rather more commissions open to them than is the case at the present time.
5. After knocking about with members of the Air Force of all ranks for several years past, I can certainly bring my own testimony to bear.
6. I have come across a considerable number of those boys who are fit to have commissions and ought to be given better opportunities of obtaining them.
7. I know the present position [in not giving the apprentices commissions] is partly due to the fact that they cannot be spared from their present [technical] duties, [meaning that the pilots didnt want them anywhere but in the ranks as tradesmen.]
8. Halton itself must be enlarged in course of time, and I hope that it will be.

10 April 1937 : Trans-Canada Air-lines created as a subsidiary of the Canadian National Railway.

10 April 1937 : J.T "Jack Dymont joins TCA as "Chief Engineer", retiring in 1969. (Dymont also chaired IATA technical cmtee for a year)

April 1937 : UK Air Registration Board (ARB) begins work. ARB composed of representatives of manufacturers, operators and under- writers controls airworthiness of UK civil aircraft - supervision of the the ARB to design and prototype inspection of aircraft up to 10,000 lb gross weight and fewer than 11 passengers. ARB responsible for the inspection of "subsequent" aircraft and for renewal of Certificates of Air-worthiness - irrespective of size. (Dr. Roxbee Cox - Flight March 1939 page 227)

20 May 1937 : First flight of the DH.91 "Albatross" prototype G-AEUV. Civil air transport aircraft of wooden sandwich construction.

May 1937 : RCAF reorganisation continues.

No. 3 (Bomber) Squadron RCAF becomes a purely bomber unit with the fighter flight becoming No. 1 (Fighter) Squadron.

RCAF Headquarters - Ottawa, Ontario

RCAF Station Camp Borden (landplane training)

No. 1 (Ab Initio Training) Squadron

No. 2 (Advanced Training) Squadron

No. 3 (Service) Squadron

"A" Flight - Siskin Fighters

## Notes on "Civil Aviation"

"B" Flight - Atlas types

"C" Flight - Communications - Fairchild 71 and Bellanca types

RCAF Station Vancouver, British Columbia (seaplane training)

No. 4 (Training) Squadron

No. 5 (Service) Squadron

June 1937 : RCAF Station Trenton replaces Camp Borden as the primary RCAF training centre. Schools included the RCAF Central Flying School,  
No. 1 Air Navigation School (to 1942),  
No. 1 Flying Instructor School, and  
No. 1 Composite Training School (Gunners were usually given the rank of Sergeant upon completion of their training).

20 June 1937, a Soviet-built ANT-25 monoplane landed at Vancouver Washinton's Pearson Air Field, completing the first airplane flight from the Soviet Union to the United States across the North Pole. The aircraft, with long, red, albatross-like wings, passed over the field in preparation for an unscheduled and unexpected landing. And although the arrival at Pearson Field was a complete surprise, there was no mystery as to the aircraft's identity. People around the world have anxiously followed its progress as its crew sought to be the first to cross the North Pole from Moscow to San Francisco. The three Russian aviators had endured 63 hours and 16 minutes in their cramped and cold aircraft and covered 5,288 miles. Later examination would reveal that a mere eleven gallons of fuel remained in the aircraft's tanks.

01 December 1937 : "You don't hear much about the air engineers but they play a vital part in making Canadian aviation safe". What was the biggest safety factor? To me it was the airworthiness of the aircraft and engine; and my thoughts reverted to Air Engineer Paul Davis who, up with the dawn, had inspected the craft from propeller to rudder, and later had affixed his okay to the flight report, thereby personally assuming all responsibility for the fitness of the machine.

While all other conditions were unfavorable, I knew from experience and Government statistics that the chances of being let down by this engine or through structural faults were a thousand to one in my favor.

Duties of an Air Engineer

WHERE WOULD the safety record be without the air engineer?

Let's see what the Government does to ensure safety in air travel.

It is all set forth in a little pamphlet called "Air Regulations" a collection of rules and regulations with which every pilot and engineer must be conversant, particularly when they are being examined for their licenses.

Like most important rulings, it is brief and very much to the point.

"No commercial aircraft shall fly on any day unless it has been inspected by an Air Engineer on that day . . . and until such Air Engineer has signed certificates of fitness of the flying machine to fly and the certificates have been countersigned by the pilot."

In short, provide the pilot with a stout ship and make someone directly responsible for its condition.

The pilot may disregard advice regarding bad weather conditions. He may fly with or without radio, and even without certain instruments which today are considered indispensable. In ordinary commercial flying, the only regulation imposed on him is that "he shall be responsible that the load does not exceed that specified in the certificate of registration, and that it is properly secured."

The air engineer is the man responsible for the condition of the craft.  
He directs the work of the mechanics;  
He inspects the plane and he "signs it off" before it takes the air.  
The ruling that he must do so is strictly enforced.

To him is due the fact that Canadian flying is characterized by very few forced landings through engine failure or structural defects.

## Notes on "Civil Aviation"

No other engineer, whatever his designation, works under such bad weather conditions.

In summer there is the extreme heat and the flies, which in the North Country are unequalled for numbers, size and voracity.

In winter the engineer is lucky if he has a nose-hangar in which to work, sheltered from a temperature that often sinks to forty below zero, and piercing winds.

Despite these handicaps, repairs are generally carried out in the open.

Commercial aircraft seldom see the inside of a hangar.

Nature at times plays tricks. Rotten ice, wind storms and flood provide the engineer with trouble in plenty, particularly when misfortune strikes at some distant Northern post or on the shores of a lake, hundreds of miles maybe from any settlement. In such cases, he is lucky if there are trees to provide poles for salvage work.

Some of the parts were damaged, so these were removed to a temporary workshop.

The machine could not be moved shoreward as the ice was too thin, so the surrounding ice was flocked daily to build up thickness, and extra skis were fitted to spread the weight.

While working on and about the machine, the engineers were roped for safety.

Each day someone fell in and had to be thawed out of his clothes, for the temperature fell as low as twenty-four below zero.

When the engine was being checked and while the valves were being ground, the temperature dropped to sixty below.

Little wonder that all suffered from frostbite, particularly on hands and wrists.

Work of this kind is much more strenuous than routine work at a base where refuelling, minor adjustments and repairs keep the engineer constantly employed.

At break-up time, equipment must be changed from skis to floats, and vice versa at freeze-up. As it is at these two periods that vacations are generally arranged, work frequently has to be rushed through with a depleted staff.

There are few slack periods if machines are to be kept in tiptop condition.

There never can be any slackening of vigilance on the part of the man who has to put his okay on the daily reports.

### Keeping Up With Developments

IN RECENT years there have been revolutionary changes in the design and construction of airplanes and their engines.

New alloys have come into use, combining lightness with strength;

new fuels are being developed giving greater power per engine unit;

new mechanical processes have been introduced into the fabrication and assembly of components.

In all these technical advances, the engineer must keep thoroughly posted.

Then there are always new ideas to be developed and tried out.

At Kenora, Ont., and Lac du Bonnet, where Engineers W. Tall and S. Tomlinson are stationed, a machine can be made ready to fly on fifteen minutes notice, no matter how low the temperature.

The older, more experienced engineers possess an uncanny knack of spotting incipient trouble, a kind of sixth sense. That is why pilots prefer certain engineers to accompany them on long or hazardous flights.

### Air Engineers:

A. "Tommy" Gilmour, Manitoba born

Bill Kahre

Emile Patrault Labrador and Northern Quebec.

Louis Parmenter, was formerly employed by Short Brothers in pre-war days.

W. Sunderland on May 8, 1936 ft mcmurray

Bill Faulkner of bc

## Notes on "Civil Aviation"

T. W. Siers, superintendent of maintenance, Canadian Airways Limited.  
Mr. A.D. Goodwin and  
Mr. F. Kelly  
Stan knight  
Mr. W. Tall - Kenora, Ont.,  
mr. S. Tomlinson - Lac du Bonnet  
paul davis

Examine any reports dealing with exploratory or other outstanding flights, and frequently there will be revealed, behind the pilot's story, another story regarding the initiative, ingenuity and courage of the air engineer.

### Training of an Air Engineer

THERE ARE many engineers in Canada who have received training as air-craft(s)men in the ranks of the Royal Canadian Air Force or the Royal Air Force.

On completion of their term of service, these men have obtained civil licenses and entered the employ of a commercial air transport company.

Other air engineers are recruited from the ranks of mechanics who have received mechanical training in factories, or who have gained an all-round experience in repair shops or at an operating base.

At least two years practical work on aircraft and engines is necessary before the aspiring mechanic will be considered as a candidate by the Government inspector.

If proof of character and experience be satisfactory he will be examined in practice and theory, and if successful will be licensed in one or more of four categories : A, B, C and D.

Licenses A and C are indispensable to the engineer working on flying services.

Possession of an A license qualifies an engineer to sign off aircraft before flight, while a C license applies to engines before flight.

But these licenses do not give blanket, coverage to sign off all types of aircraft or engines.

The Government's objective is safety,  
so all licenses are endorsed only for those types of craft or engine with which the engineer has had a close working acquaintanceship.

The engineer who has worked only on Flying Club Moths and Gypsy engines could not sign off a Fairchild or Stinson; neither could he sign off a ship equipped with a Wasp or Cyclone motor.

There are no exceptions to this ruling.  
A university degree or membership in an engineering society does not count.  
Even aircraft designers cannot sign off the ships they have designed.

This may appear unduly restrictive, and undoubtedly at times it proves inconvenient to the operating company; but there it is, a ruling imposed in the interest of safety.

Once a year each commercial airplane is thoroughly reconditioned.

The skeleton of the structure, if fabric covered, may have to be stripped and examined for corrosion, fractures or other signs of deterioration.

## Notes on "Civil Aviation"

The internals of the wings are inspected and repaired if necessary, and all other units—undercarriage, fin, rudder, tail plane and floats—receive similar treatment.

When work of this nature has been done, or when, on operation, major repairs have been effected, only an engineer having a B license can certify the aircraft as airworthy.

There are certain reservations even to this ruling.

Major repairs to engines are certified as okay by an engineer having a D license.

The technical knowledge and practical experience required to attain ranking in categories B and D pertain more to manufacturing processes.

The candidate must have a knowledge of  
the strength and testing of materials,  
fuels and lubricants, also of  
the heat treatment of metals.

It is not surprising, therefore, that there are comparatively few engineers assessing licenses endorsed for all four categories.

The youth whose aspirations lean to the engineering side of air-transport operations would be well advised to gain some practical experience in an engineering workshop before going as a mechanic on field operations.

Educationally, a high-school standing is desirable, and in addition an all-round knowledge of internal-combustion engines and allied subjects.

There are no institutions in Canada where intensive training is given to youths who wish to qualify as air engineers, nor are there any scholarships which open the way for boys to high executive posts such as those financed by the Society of British Aircraft Constructors.

The work of the air engineer is such a vital factor in promoting safety and efficiency in aircraft operation that the provision of adequate technical instruction is a matter of concern not only to the employers but to the public.

Facilities for giving advanced technical instruction other than that afforded by routine and practical work in the shops and at the bases, are not easily available, particularly in Western Canada.

During the winter 1935-36 the University of Manitoba, co-operating with the Aviation League of Manitoba, arranged a series of lectures and laboratory demonstrations under the direction of Professor A. E. Macdonald.

The subject matter and projects were arranged specifically to cover the requirements of candidates for B and D licenses.

This scheme is notable as being the first in Canada arranged to assist the air engineer, and much of the success attending the effort may be ascribed to the interest of

T. W. Siers, superintendent of maintenance, Canadian Airways Limited.

Flying instruction is subsidized by the Government,  
flying clubs receive grants for ab initio pilots, but  
heretofore the air engineer has had to bear the cost of apprenticeship, training, tools, etc., out of his own pocket.

### Air Transport's Future

WHAT DOES the future hold for the air engineer? What chance is there of promotion?

This may be answered partially by a reference to the "Annual Report on Civil Aviation," until recently published by the Department of Defense, Ottawa.



## Notes on "Civil Aviation"

It must be borne in mind that commercial aviation in Canada is little more than ten years old, so deductions must be tempered with an appreciation of the comparatively limited aerial activity of this period and what will indubitably be the greatly augmented activity of the era which lies ahead.

In 1926 : forty-four licensed aircraft in Canada;  
there were sixty-five air engineers, many of whom were licensed pilots.

In 1936 the number of licensed aircraft had risen to 450, and  
air engineers numbered 533.

Scanning the list of engineers of 1926, it is noticeable that about fifty per cent of their number are today holding executive positions.

Be it noted also that most of these men held the dual qualification. pilot / engineer - Less than ten are acting in a purely engineering capacity today.

However, the period under consideration was essentially a formative period, so that it is extremely difficult to prognosticate regarding the future of the more than 500 engineers who have qualified and maintained their status since 1926.

In many cases, the younger air engineers are today graduating as pilots, undoubtedly, with their intimate knowledge of operations, some will make the grade as executives.

Prospect of increased remuneration is the chief incentive for the change;  
more over, engineering executive opportunities are not numerous.  
After deducting the totals of the six largest commercial air fleets and excluding flying clubs and private craft, it is apparent that, with  
operating companies numbering 116, and  
those employing only 241 aircraft,  
the majority of firms are operating only one or two aircraft each, one-man propositions as regards engineer requirements.

This is the immediate outlook, but the great era of aerial activity has only commenced.

Canada's major project in air transport has yet to be organized and staffed.

For years to come, air transport will be indispensable to Northern development.

It is certain, therefore, that in the years ahead there will be a steady demand for the services of air engineers to maintain the augmented fleets of this Dominion.

Successful operation of scheduled services, necessitating night flying and flying in bad weather, will depend to an ever increasing degree on the competent application of those aids to navigation with which all air-line pilots are provided. These delicate instruments, mechanical and electrical in operation, will need constant care and expert maintenance.

Development of international and transoceanic routes, as yet in their experimental stages,  
will call for the use of craft even larger than the biggest now in use;  
craft having more powerful engine units, with greater combined output.

Throughout all this expansion, the prime concern will be that of safety.  
Speed, comfort, and regularity are as nothing if safety be not assured.

"Early and provident fear is the mother of safety," said Edmund Burke.

"Provident fear" is best evinced before a take-off, and  
the Government has decreed that the exercise of "provident fear" shall be the specific function and responsibility of the air engineer.

In view of the exacting nature of this duty, who can deny that the work of the air engineer, so often overlooked or forgotten, is the factor contributing most to safety in flight? - source ref : Forgotten Men of Flying - W. B. BURCHALL McLean's magazine - 01 December 1937

## Notes on "Civil Aviation"

1937/38 : Handley Page (UK) conceives and develops principle of "split construction", sub-dividing aircraft into "major" sections and "minor" sub-sections. Allows complex aircraft manufacture to be dispersed. Allows relatively unskilled persons trained for only one or two tasks to manufacture small sections at high pace. Smaller sections can later be assembled as a whole. during WW2 Peak production resulted in one Halifax being completed every hour. investigate "VRV" - re loss and repairs.

Q : by 1937 : The Empire Air Mail "scheme" (Programme): was the Air Ministry facing ground organisation costs which it had never contemplated? surrender was partly accomplished by politicians and officials who colluded with the Air Ministry to overturn the decisions of the Cabinet, by, among other things, undermining the credibility of technical experts.. EAMS ... the agreed budget did not hold because it contained economies to accommodate the Air Ministry's financial embarrassment, and these could not be sustained in practice

1937 : Canadian government (Mackenzie King) approves increase of annual quota of Canadian applicants to RAF to 25.

1937 : British government requests increase of annual quota of Canadian applicants to RAF to 120.

1937 : Frank Whittle, Royal Air Force (RAF) engineer officer. turbojet engine prototype first run.

1937 : Lockheed Model 10 Electra flown by Amelia Earhart disappears without trace.

1937: Aircraft produced in England :

- 1) Supermarine Stranraer long-range maritime reconnaissance flying boat;
- 2) Armstrong Whitworth Whitley medium bomber
- 3) Handley Page Harrow medium bomber
- 4) Bristol Blenheim light bomber
- 5) Fairey Battle light bomber
- 6) Vickers Wellesley light bomber
- 7) Gloster Gladiator enters service
- 8) Hawker Hurricane enters service.

1937-1938, Canada spends \$9,665,000 on RCAF projects. each involved a compromise:

1937 - 1938 : options available to the federal government for aircraft purchase:

Buy American aircraft and risk an embargo

Buy British and wait until after deliveries to RAF were completed so deliveries to RCAF can begin

Buy Canadian and wait months until industry can start to produce aircraft of foreign design.

1938 - 1939 : Air Commodore Croil's solution : production of RCAF aircraft / equipment in Canada.

Cabinet accepted his opinion. Consequently, the potential for industrial production in the field of aviation had to be established locally and as quickly as possible. There could be no other basis for the rcaf's rearmament program. By awarding the contracts, and hoped that Canadian manufacturers would have the opportunity to gain experience in the large-scale production of modern combat aircraft. In the event of a conflict, this experience could carry a great deal of weight.

Government stated policy (DND) for all branches of the military (the Canadian Army, rcn and rcaf):

Combat equipment should be identical to that used by the British armed forces.

Canada should fly aircraft of the same design as those in the RAF(However the maintenance policy differed - esp where aircraft were concerned)

Other factors contributed to this preference: for example, the close cultural, political and military links that united the Commonwealth, and the possibility of a transfer of rcaf units to Great Britain in the event of a conflict, as well as the power of the isolationist movement among the American people and in the U.S. Congress.

In practice, the decision on which aircraft would meet the RAF's and RCAF requirements was made by Air Ministry experts. It was generally not until after this decision was made that they indicated their preferred manufacturer. This is exactly how the rcaf operated in 1935 when it asked the Air Ministry to recommend a reliable and effective torpedo bomber.

The aircraft selected would have to be able to operate from isolated bases offering little protection against the rigours of the Canadian climate. The British considered the question and suggested that the rcaf adopt the Blackburn Shark.

## Notes on “Civil Aviation”

This large all-metal, open-cockpit, single engine biplane with fabric-covered folding wings was extremely reliable and easy to maintain.

Its conventional landing gear could easily be replaced with floats or skis.

Moreover, the manufacturer of its Tiger engine, Armstrong Siddeley Motors, had had a representative in the country, Ottawa Car Manufacturing, since 1927.

The rcac accepted the UK Air Ministry's suggestion. Its initial order was for seven Shark iis, 4 of 7 Blackburn Shark delivered to RCAF beginning 15 October 1936. The first aircraft was taken on strength on 15 October. The remaining 3 Shark iis arrived in Canada in the spring of 1937. All these aircraft were fitted with an enclosed cockpit and, most of the time, with floats. Apparently only one aircraft was fitted with skis, for trial flights. The history of the Blackburn Shark had begun in 1933. In that year the Air Ministry asked a few manufacturers to prepare plans and specifications for a torpedo bomber to be used in the squadrons of the British Fleet Air Arm (FAA), then under the control of the raf. Anxious not to lose its status to other aircraft makers, Blackburn Aeroplane & Motor submitted drawings, although it had not been invited to participate in this particular project. Its prototype made its maiden flight on 24 August 1933. Those conducting the official tests were so impressed by its performance that it won the competition. Blackburn produced no fewer than 253 Sharks between 1933 and 1938: 238 for the faa, including the prototype; nine for the rcac; and six for the Portuguese Naval Air Force, the Aeronautica Naval. Ultimately, the first RCAF Shark iii did not make its maiden flight until 21 July 1939, at Jericho Beach air station, near Vancouver. William James Holland, a pilot working for Ginger Coote Airways, a small air transport company from the region, was at the controls. Producing an aircraft as large as the Stranraer in Canada — as of that time, it was the heaviest aircraft ever made in this country — certainly could not be accomplished overnight. Preparations for its production were to continue for almost two years. The first Canadian Stranraer flew on 21 October 1938 and was taken on strength by an rcac squadron on 9 November.

In light of the everworsening international situation, the rcac chose to sign additional contracts for a further seven and later six aircraft, in November 1938 and August 1939, respectively. After Canada declared war in September 1939, the rcac ordered twelve more Stranraers, and then another twelve in 1941.

Bolingbroke - The rcac ordered eighteen aircraft in November 1937, and made an order for a further eleven in June 1939. Fairchild Aircraft immediately began preparations for production, although progress was to be slow. Bristol Aeroplane was already busy with numerous British and foreign orders, and needed a great deal of prompting.

A decisive step was taken in this long and difficult process on 14 September 1939 - the first Canadian Bolingbroke made its maiden flight - Longueuil Quebec.

The first rcac squadron to receive Bolingbrokes took them on strength in July 1940.

As early as 1938 or 1939, the rcac asked Fairchild Aircraft to prepare plans for a float equipped Bolingbroke that would be based along Canada's coasts. MacDonald Brothers Aircraft of Winnipeg, Manitoba, for the supply of floats. This company held the Canadian rights for the very successful American designed Edo floats (their name taken from the initials of the company's founder, Earl Dodge Osborn). Thus, MacDonald Brothers built a first set of floats for use on the prototype, designated Bolingbroke 1F (F standing for floats). If the trials proved satisfactory, the company was to build twenty-three more sets of floats.

Realizing that the performance of the Bolingbroke if might be insufficient, the rcac asked Fairchild Aircraft to equip the prototype with more powerful Bristol Mercury engines.

The aircraft was immediately given the new designation Bolingbroke iii. It made its first flight as a seaplane on 28 August 1940.

Its performance proved satisfactory but the rcac eventually decided not to order more float-equipped Bolingbrokes.

It is possible, however, that Fairchild Aircraft built a certain number of Bolingbrokes so that they could be fitted with floats in the future.

December 1937 : RMC - Kingston : 1538, Flt.-Lieut. D. H. MacCaul is in England attending a Torpedo Course at H.M.S. Vernon. He has recently completed an Engineering Course at the Royal Air Force School of Aeronautical Engineering, Henlow, England.<sup>222</sup>

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<sup>222</sup> R. M. C. REVIEW December 1937 pg 82 : Ex-Cadet Section of the Royal Military College of Canada Club

<b>1933 : BRITISH COMPANIES OPERATING "AIR" LINES</b>
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Company name	Type(s) operated
BLACKPOOL & WEST COAST AIR SERVICES, LTD.	DH Dragon
THE BRITISH AMPHIBIOUS AIR LINES, LTD.	Cutty Sark
GREAT WESTERN RAILWAY	Wessex - 3x 7 cyl. "Genet" - eight seater.
HIGHLAND AIRWAYS	Mono-spar Dragon
HILLMAN'S AIRWAYS	Puss Moth Fox Moth Dragon
MIDLAND & SCOTTISH AIR FERRIES, LTD.	Dragon Avro Ten (X)
NORMAN EDGAR	Puss Moth Fox Moth
THE NORTH SEA, AERIAL & GENERAL TRANSPORT, LTD.	Meteor Fox Moth
PORTSMOUTH, SOUTHSEA & ISLE OF WIGHT AVIATION, LTD.	Wessex - 3x 7 cyl. "Genet" - eight seater. Monospar Puss Moth Spartan Klemm
SPARTAN AIR LINES, LTD.	Spartan "Cruiser" - 3 Cirrus- Hermes IV engines - 120-130 h.p. at 2,000-2,200 r.p.m

Junkers G 38 D2500 "GENERALFELDMARSCHALL VON HINDENBURG"

## Notes on "Civil Aviation"

31 December 1936 : Licensed Air Engineers in Canada ??? source ref :  
31 December 1937 : Licensed Air Engineers in Canada 595 source ref : pg 266 "The Engineering Journal" May 1943 <https://archive.org/details/engineeringjourn26engi?q=Canada+Air+Engineers>  
31 December 1938 : Licensed Air Engineers in Canada 643 source ref : pg 266 "The Engineering Journal" May 1943 <https://archive.org/details/engineeringjourn26engi?q=Canada+Air+Engineers>  
31 December 1939 : Licensed Air Engineers in Canada 722 source ref : pg 266 "The Engineering Journal" May 1943 <https://archive.org/details/engineeringjourn26engi?q=Canada+Air+Engineers>  
31 December 1940 : Licensed Air Engineers in Canada 822 source ref : pg 266 "The Engineering Journal" May 1943 <https://archive.org/details/engineeringjourn26engi?q=Canada+Air+Engineers>  
31 December 1941 : Licensed Air Engineers in Canada 832 source ref : pg 266 "The Engineering Journal" May 1943 <https://archive.org/details/engineeringjourn26engi?q=Canada+Air+Engineers>  
31 December 1932 : Licensed Air Engineers in Canada 944 source ref : pg 266 "The Engineering Journal" May 1943 <https://archive.org/details/engineeringjourn26engi?q=Canada+Air+Engineers>

### CANADIAN AVIATION - 1938

24 February 1938 : Parliament - Ottawa : **Topic:** DEPARTMENT OF TRANSPORT

Denton Massey (Conservative): Would the minister [Clarence Decatur Howe (Minister of Transport) Liberal] be good enough to inform the committee of the procedure followed in laying down regulations as to the airworthiness of our aircraft, the qualifications of pilots, and matters of that sort? I think it would be of great interest to know how these regulations are arrived at and determined.

Clarence Decatur Howe (Minister of Transport) Liberal : An international convention upon airworthiness and navigation governs both those points reasonably closely. We are just now completing our new regulations as to airworthiness and requirements for pilots. They will be out very shortly, and rather than give an amateurish explanation of what is in them, I shall be very glad to send a copy of them to my hon. friend

1938 : new single engined monoplane bomber, the Vickers Wellesley, flew non-stop from Upper Heyford to Darwin, Australia, a distance of 7,162 miles thus setting another international record

1938 : The Short Sunderland long-range maritime reconnaissance flying boat, the Handley Page Hampden and Vickers Wellington medium bombers, the Supermarine Spitfire fighter and the Westland Lysander enter service.

January 1938 : Fairchild 45-80 Sekani, a small twin-engine ten- to twelve-seat transport aircraft that made its maiden flight on 24 August 1937. shortly before trials with Mackenzie Air Service, Fairchild Aircraft produced only two of the aircraft, which were soon demolished,

During the rearmament period... the RCAF signed purchase agreements for approx 200 aircraft to be built or supplied by "Z Canadian manufacturers of UK origin".

These orders constituted the greatest effort undertaken by the Canadian aircraft industry during the interwar years. From these delays, which were already serious, further problems were to arise. Given its limited financial resources, the rcaf had no desire to take needless risks.

## Notes on "Civil Aviation"

fall 1938 : Canadian aviation policy problems are recognised in Ottawa : senior federal officials began to react  
Under Secretary of State for External Affairs Oscar Douglas Skelton  
Since 193x? (For some time now,) specialised media and Canadian newspapers had been fully aware that all was not well at dnd.  
RCAF modernization program

193? - 1939: UK : RAF avoids purchase of new aircraft designs or prototypes, sticks with tried and true (WHY? - unable to properly maintain them ? fast advances being made ? UK oversight says they are not able to do anything with newer types due to how the RAF is structured -technically ? )

1939 : UK, Germany, France etc and USA : aircraft and aviation technology undergoes rapid transformation in the 1930s.  
Increasingly, wood and tube biplanes disappeared, replaced by all-metal low-wing monoplanes.  
Unfortunate for the rcac and for Canada.

1939 : Most of the aircraft ordered by the RCAF to be built / assembled in Canada were obsolete (as a result of RAF policy ? ) when they entered service.

spring 1939 : The Winnipeg Free Press publishes a series of articles highlighting the deficiencies in Canadian federal aviation policy.

1939 : Canada : The Financial Post " Canadians have lost confidence in dnd's leadership"  
Numerous details of Canadian Government's aviation policy remain obscure  
explanations of Minister of National Defence Mackenzie are unsatisfactory.  
Occasional insulting remarks by Minister of National Defence Mackenzie certainly did not help the situation.

March 1939 :

"DND's difficulties stem largely from a minister whose competence,  
political weight and interest in his work were all too limited" <sup>223</sup>  
- British high commissioner to Canada

19 - 30 September 1938 : 4th International Conference on Private Air Law, Brussels. This conference marked the end of a series.  
CITEJA met once more in January 1939 before the outbreak of the Second World War interrupted its work on the gradual unification of regulations governing private air law.  
After WW2 the CITEJA commission ceased to exist. Their role was taken over by ICAO with creation of the ICAO Legal Committee.  
Since 1946 the Legal Committee of ICAO (an NGO) "deals with problems of both public and private air law" <sup>224</sup>

October 1939 : Prime Minister King transfers Mackenzie to minister of Pensions and National Health soon after the start of the Second World War.

1939 : On the eve of war, Canada was aeronautically ill-prepared. Poor government Policy, limited aeronautical engineering (and almost no interaction between the technicians and the technologists) a majority of unskilled tradesmen under the direct control of an educated but unskilled military officer cadre, relatively few skilled trades persons, even fewer aircraft safety inspectors and with a DND oversight group that ran the whole thing like a private flying club <sup>225</sup>

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<sup>223</sup> British high commissioner in a note addressed to the secretary of state for the Dominions. Canada Aviation Museum : Photo Essays : " And Look After Our Coasts " The Royal Canadian Air Force and the Production of Coastal Defence Aircraft in Canada, 1936–1939 Ronald Fortier Curator, Aviation History Canada Aviation Museum.

<sup>224</sup> McGill Law Journal : AN HISTORICAL SURVEY OF INTERNATIONAL AIR LAW BEFORE THE SECOND WORLD WAR - Peter H. Sand / Jorge de Sousa Freitas / Geoffrey N. Pratt - HISTORY OF AIR LAW, pg 41

<sup>225</sup> The Canadian dnd's policy had called for too little, too late and, as a result, the rcac had at most a few relatively modern combat aircraft — Canada was defenceless (Canada Aviation Museum : Photo Essays : " And Look After Our Coasts " The Royal Canadian Air Force and the Production of Coastal Defence Aircraft in Canada, 1936–1939 Ronald Fortier Curator, Aviation History Canada Aviation Museum)

## Notes on “Civil Aviation”

1938 : Mr. Leigh Brintnell, Aircraft Repair (Edmonton) *had two mechanics stationed at the Airport during all club flying. “Each evening the aircraft are inspected and signed out by their charge engineer for the following day. All repairs and replacements are carried out by Aircraft Repair Ltd. at their Workshop.*

1938 : H.W. Francis, Frank Burton - receives an Air Engineer License.

1938 J.K. Lewis joins TCA

March 1938 : Program to expand the Royal Air Force continues, the number of front-line aircraft deemed necessary for the defence of the British Isles rises from 1250 to approximately 2375

March 1938 : King government approves increase of annual quota of Canadian applicants to RAF to 120. Canadian Cabinet and the UK-Air Ministry prefer Canadian recruits be trained in Canada and to operate within RCAF squadrons.

May 1938 : British Prime Minister Neville Chamberlain sent a mission to Ottawa to assess the Canadian aircraft industry and its manufacturing potential.

The head of the British mission, industrialist J.G. Weir, was also instructed to put forward the “air training question” again.<sup>226</sup> The opportunity to do raise the “air training question” arose during a meeting between:

- a) J.G. Weir, head of the British mission
- b) Sir Frances Floud, British High Commissioner in Ottawa
- c) Mackenzie King, Prime Minister of Canada

At this meeting, Mackenzie King refused to accept the British training proposal.

A subsequent meeting only served to aggravate Mackenzie King.

**Mackenzie King’s stated main objection<sup>227</sup> to the British air training proposal**, as expressed to the House of Commons, rested in having “...

1. a British Imperial Government military station established in Canada, that is
2. owned by the British Imperial Government for British Imperial purposes,
3. maintained by the British Imperial Government for British Imperial purposes, and
4. operated by the British Imperial Government for British Imperial purposes”.

Mackenzie King saw **the British air training proposal** as distinctly different from:

1. having British pilots train in Canada,
2. having British pilots train Canadian facilities,
3. having British pilots train under Canadian control

Mackenzie King would not sign **an agreement that could be viewed as “committing Canada to a future European war on Britain’s side”.**

Such a decision at that time would not have been well received by the province of Quebec, which still harboured a great amount of resentment and discontent with respect to Canadian involvement, and, particularly, the conscription issue, during the First World War.

Mackenzie King cautions the British delegation not to disclose the content of the discussions publicly.

the information was subsequently leaked to the press (by King’s people), leading to embarrassing enquiries and governmental criticisms being raised

- A. in the Senate by Arthur Meighen, and,
- B. in the House of Commons by R.B. Bennett, the Leader of the Opposition.

Mackenzie King was forced to admit to their occurrence, and some very lively debates ensued.

The Prime Minister’s stance on the issue, and therefore that of the Canadian government, was pointedly stated:

“This government has never at any time said that it was not prepared to give, in our own establishments, the opportunity to British pilots to come over here and train.

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<sup>226</sup> F.J. Hatch, *The Aerodrome of Democracy: Canada and the British Commonwealth Air Training Plan, 1939-1945* . Ottawa: Directorate of History, Department of National Defence, 1983, p. 8.

<sup>227</sup> J.L. Granatstein, *Canada’s War : The Politics of the Mackenzie King Government, 1939-1945* - Toronto: Oxford University Press, 1975, p. 44.

## Notes on "Civil Aviation"

But they will do it in our own establishments. Controlled by our own Minister of National Defence, who is responsible to this parliament.

This is an entirely different thing from having a branch of the British forces establish headquarters in this country, direct their own men here and be responsible, not to this parliament for what takes place in Canada as a consequence, but only to the British parliament and the British people” <sup>228</sup>

03 October 1938 : University of Toronto commences a two-year diploma course in Aerial Navigation - Source Department of University Extension, Extension Course Sheets, Applied Science and Engineering, Aeronautic Training, 1938

“The post ww2 Extension Course Program is similar to the extension course program in existence before the war, in which you simply enroll in a given course and study the lessons submitted along with the material included with them and finally solve the problems as a test to determine whether you have assimilated the instruction and received the training from the course you were supposed to receive [...] We found that a combination of the three programs provided the best method for training Reserve officerlawyers. The Volunteer Air Reserve Training Program is the principal one, supplemented by the Mobilization Assignment Program to prepare training materials and take care of those officers who reside near Air Force installations with activities within the field of their training and experience. The Extension Course Program is a by-product of the other two and takes care of those who reside neither near an Air Force installation nor a community large enough for a Volunteer Air Reserve Training Unit.” <sup>229</sup>

December 1938 : Imperial Airways (Australia) suffers 2 flying boats accidents. While the aircraft are lost due to operating overloaded, they were deemed “poorly designed” in the final report.

19 December 1938 : RCAF becomes an “autonomous service” with its own staff and its own leadership in Ottawa. Canadian Air Commodore George M. Croil is promoted to Air Vice-Marshal and becomes Chief of the Air Staff. As a result, the RCAF no longer reports to the “Chief of the General Staff, Canadian Army”. The RCAF now reports to Air Vice-Marshal Croil, who then reports directly to the Minister of National Defence.

1838 : The Royal Canadian Air Force orders 25 Airspeed Oxford Mk.I aircraft.

Taken from RAF stocks in the UK, the Oxford’s are shipped to Canada in 1940, assembled by Canadian Vickers at Montréal and issued to the Central Flying School.

31 December 1936 : Licensed Air Engineers in Canada ??? source ref :

31 December 1937 : Licensed Air Engineers in Canada 595 source ref : pg 266 “The Engineering Journal” May 1943

31 December 1938 : Licensed Air Engineers in Canada 643 source ref : pg 266 “The Engineering Journal” May 1943

31 December 1939 : Licensed Air Engineers in Canada 722 source ref : pg 266 “The Engineering Journal” May 1943

31 December 1940 : Licensed Air Engineers in Canada 822 source ref : pg 266 “The Engineering Journal” May 1943

31 December 1941 : Licensed Air Engineers in Canada 832 source ref : pg 266 “The Engineering Journal” May 1943

31 December 1932 : Licensed Air Engineers in Canada 944 source ref : pg 266 “The Engineering Journal” May 1943

1938 : Report of the Royal Commission on Transportation, Province of Ontario, <sup>230</sup>

Chair: The Honourable Mr. Justice Edgar Rodolphe Eugene Chevrier.

Commissioners: Clarence Richard Young, Edwin Roy Sayles

1.15—Hours, Wages and Benefits in Other Forms of Transport Than Motor Transport.

Findings.

(1) Railway Transport. In the railway service, the 8-hr. day and the 48-hr. week are standard, except for the shop trades. Passenger train crews work on an average from 7 to 8 hrs., while freight train crews average from 9 to 10 hrs. In the freight service, however, there are a substantial number of men on duty for periods of 13 to 14 hrs. and in some cases even as long as 20 hrs.

On the basis of a 60-hr. week, which is observed by many motor transport operators, railway engineers would earn approximately from \$46 to \$51.

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<sup>228</sup> Wing Commander F.H. Hitchins, Air Board, Canadian Air Force and Royal Canadian Air Force, p. 355 - Ottawa: National Museums of Canada.

<sup>229</sup> JAG journal bulletin No.6, 1950

<sup>230</sup> <https://archive.org/stream/transportcommooonta#page/166/mode/2up/search/Air+Engineers'>



## Notes on "Civil Aviation"

Passenger baggagemen would earn about \$36, passenger brakemen about \$35, and freight brakeman about \$36.

To this amount should be added the dollar value of the substantial benefits other than actual pay derived in the railway service, although this could not be definitely evaluated by those giving evidence for the railways.

In transportation and station service, where the normal day is of 8 hrs., the pay adjusted to a 60-hr. week would amount to about \$30 for porters and truckers, \$34 for baggage, parcel-room and station attendants and \$39 for freight checkers. (Art. 6.11).

(2) Railway Express Service. In the railway express service, which is based on a normal 8-hr. day, the pay of vehiclemen or truck drivers would, on the basis of a 60-hr. week, amount to from \$31 to \$35, approximately.

Vehicle helpers would receive about \$29. To this, again, should be added the value of the special benefits received. (Art. 6.12).

(3) Marine Transport. In marine transport, assuming the standard day to be of 12 hrs., the pay of second mates for a 60-hr. week would ordinarily range from \$24 to \$27, approximately ; of third engineers from \$25 to \$27 ; of wheelmen and oilers, from \$16 to \$22; and of sailors or deckhands from \$14 to \$16. In these cases, the value of the free board has been included at one dollar per day. (Art. 6.13).

(4) Air Transport. In the air service the pay of an air engineer or aircraft mechanic is about \$115 per month; of an air engineer helper or aircraft mechanic helper, \$80; for chauffeurs, firemen and servicemen, \$80. (Art. 6.14).

### 1.16—Hours, Wages and Benefits in Motor Transport Compared With Those in Other Forms of Transport. Findings.

(1) Causes of Long Hours and Low Wages in Motor Transport. Irregular hours are inherent in the transport industry and occasions will arise when men must remain on duty for longer periods than are prescribed in the normal operating schedules. One of the chief factors permitting motor truck transport to compete successfully with the railways is the meeting of the wishes of the shipping public by accepting freight at almost any time and making deliveries at the earliest possible moment. The Commission does not believe that it is expedient to deprive the shipper of this class of service or the trucker from providing it, although the attendant circumstances undoubtedly add to the difficulty of maintaining reasonable hours of service for motor trucking employees. (Art. 6.1).-

While giving full recognition to the need for allowing some latitude in the matter of working hours in the motor trucking industry, the Commission finds that in many instances men have been asked or permitted to remain on duty for excessively long periods. In many cases wages have been out of proportion to the hours worked or to the responsibility of the driver for either the safety of the public or the value of the equipment and cargo in his care.

On the other hand, both in public commercial vehicle operations and in private trucking, many instances of fair and reasonable treatment were found, even in spite of adverse financial circumstances. (Art. 6.2).

Long hours and low wages in the motor trucking industry in Ontario have arisen from the overcrowding of the field by licensed operators, resulting in uneconomic competition for the available business; from the overstocking of the labour market, with inevitable competition for employment at almost any wages; and from the lure of a new industry that can be entered upon with

a minimum of capital and no specialized training or skill—an industry which to the man in the street, unacquainted with other than the most elementary aspects of the transport business, appears to be a very profitable one. Moreover, the compelling-urge to be constantly on the move gives to the driving of a truck a greater appeal irrespective of hours than does work on a farm or in a factory. (Art. 6.3).

The economic range of the truck has a particular relationship to the hours that the driver is able to drive and the time within which a return trip can be accomplished. Having regard to the monetary urge for operators to work their

## Notes on "Civil Aviation"

drivers up to the limit of their physical ability, and the more pardonable urge on the part of the men to earn as much as possible in the only way immediately open to them to do so, it is not surprising that working hours readily tend to become unduly long. (Art. 6.3).

A circumstance tending to long hours is the desire of drivers on "turnaround" runs to return to their home terminal at night or after a moderate amount of rest. Due to the frequent need of waiting for a cargo at the far terminal, a "badly split" day may result, involving eight or ten hours of driving in a spread of ten to thirteen hours. Where the driver is operating on a trip basis he may be held up a long time at his own expense due to breakdowns or to the necessity of waiting for the arrival of a connecting transport. (Art. 6.3).

In for-hire operations long hours and low wages were found by the Commission to follow in the wake of low haulage rates. Thus, many more examples of unsatisfactory working conditions for employees were found for Eastern Ontario, where rates are relatively low, than for Western Ontario where a higher rate level obtains. (Art. 6.3).

(2) Hours, Wages and Benefits in Public Commercial Vehicle Operation. Conditions complained of by employees of motor trucking operators arise with particular frequency in the case of Class "D" (contract) carriers, who are under no obligation to maintain a regular freight service. The twin evils of excessively long hours and low wages were also indicated in the operation of Class "E," milk and cream carriers, and Class "F" carriers of livestock, construction materials, coal and lumber. (Art. 6.4).

(a) Highway Drivers. The more stable public commercial vehicle operators grant a 60-hr. week to highway drivers without the incubus of the split day. For this they frequently pay from \$20 to \$25, and in some cases up to \$35. Many operators, while providing a 60-hr. week, are not able to pay more than \$12 to \$20 per week. Still others not only require very long hours of their drivers but pay low wages. Days of 11 to 14 working hours are comparatively common; 14 to 18 hrs. of duty have been found to occur with disconcerting frequency; duty periods of 18 hrs. and up to 24 hrs. have been reported in a sufficient number of cases to be noteworthy. Weeks of from 70 to 100 hrs. in the busy season are distressingly common and some were reported up to as much as 115 hrs. In many instances, badly-split days were disclosed, involving from 6 to 9 hrs. of work in a spread of from 12 to 15 hrs. and in other cases working periods of 10 to 14 hrs. in a spread of from 17 to 19 hrs.

In a substantial number of cases men were reported as working from 67½ to as long as 115 hrs. per week for wages ranging from \$9 to \$12. A wage of \$15 for a working week of from 60 to 84 hrs. was found to be very common. The percentage of cases involving extremely long hours appears to be definitely greater than the percentage of men working for correspondingly long

6.14— Working Conditions in Air Transport. No submissions were made to the Commission in the matter of hours, wages and benefits of men employed in connection with air transport.

According to the Canada Year Book, 1938, there were, in 1936, 548 persons employed in commercial aviation at an average salary or wage of \$1488 per annum. The flying clubs employed 67 persons at an average of \$1206 per annum.

From correspondence, the Commission learns that the minimum rates paid by a large air transport organization, for positions at all comparable to those in motor transport, are, per month:

\$200 for a second pilot,

\$200 for a chief mechanic or foreman,

\$175 for a crew chief or sub-foreman,

\$115 for an air engineer or aircraft mechanic,

\$80 for an air engineer helper or aircraft mechanic helper, and

\$80 for chauffeurs, firemen and servicemen.

The maximum monthly rates exceed the minimum by from 15 to 75 per cent.

## Notes on “Civil Aviation”

Except for positions in the lower grades, these amounts are somewhat greater than the average of salaries and wages paid by highway motor transport in Ontario as a whole for the same year. Excluding executives, it was \$1024.<sup>231</sup>

11.12 - Minimum Permissible Wages in Trucking Operation : (with ref to Ch. VI - HOURS, WAGES AND BENEFITS) Wage Levels in Other Forms of Transport. Attempts were made by witnesses to compare the relative demands on skill, endurance and dependability of drivers of commercial motor vehicles and employees in other forms of transport.

Obviously the truck driver and the locomotive engineer occupy positions that are not closely comparable. Mr. Fabian expressed the view that the express messenger constituted the nearest comparison with the motor truck driver. Here again, the comparison is imperfect in that the express messenger has *important clerical duties* and *assumes a considerable degree of financial responsibility*, but has no driving responsibilities.

In ground service connected with air transport, pg 166 of the Ontario report of the ROYAL COMMISSION ON TRANSPORTATION, 1938<sup>232</sup>

a crew chief or sub-foreman would receive about \$42 per week,  
an air engineer or aircraft mechanic about \$35,  
helpers to air engineers or aircraft mechanics about \$23, and  
chauffeurs, firemen and servicemen about the same.

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<sup>231</sup> Brief of the Automotive Transport Association of Ontario, February 23, 1938, p. 16.

<sup>232</sup> <https://archive.org/details/transportcommooonta?q=Air+Engineers%27>

1939 : The RAF is “largely a force of all-metal monoplanes equipped with automatic pilot, retractable undercarriage, and variable pitch propeller”

February 1939 : First flight of the the Gregor Fighter/Dive Bomber “FDB” Mk.1 registered “CF-BMB” at Can.Car's factory in St. Hubert near Montreal.

painted in all over semi-gloss grey. CF-BMB was designed and built at Canadian Car and Foundry (Can-Car) in Fort William, Ontario.

Designed by Mikhail Leontyevich Grigorashvili (Michael Gregor) a 1921 Russian immigrant to the USA from Derbent on the Caspian Sea - aircraft designer and the owner of an impressive resumé with experience both in the Soviet Union and in the United States of America.. one of the first two aviators in Russia, he built a Blériot XI aircraft Russian nobleman de Seversky. (Seversky's son, Alexander built the massive American company Republic Aircraft) designed three aircraft types.

During the First World War, from 1915 to 1917, Gregor (Grigorashvili) worked as the chief designer at the aviation factory of R.F. Meltzer where managed design, testing and production of propellers of his own design. At the time, he and the Meltzer company were leaders in Russian propeller construction and manufacturing. Curtiss-Wright as a senior designer, then in 1928, he became Chief Designer at the Bird Aircraft Company (formerly Brunner-Winkle) of Glendale, New York for 4 years . (Brunner-Winkle Bird considered one of the safest aircraft to fly at the time.

The Brunner-Winkle Bird, designed by Michael Gregor (an American citizen by this time) was a lovely little aircraft in many respects.

The Model A (seen here) was powered by the Curtiss OX-5 in-line engine.

The Model A's ease of handling led to its entry into the 1929 Guggenheim Safety Airplane contest, where it was awarded the highest ratings for a standard production aircraft.

The model B was powered by the more reliable Kinner K-5 un-cowled radial ).

Gregor then worked as Deputy chief designer at Seversky Aircraft Corporation which was located at Roosevelt Field.

Gregor started up his own aircraft design company—the Gregor Aircraft Corporation. As President and Chief Designer, he designed and built two biplane aircraft—the GR-1 and the GR-2.

Gregor GR-1, also called the GR-1 *Continental* and the GR-1 *Sportplane*, was a biplane with a tail-wheel undercarriage and was intended to be a light, low cost, training aircraft for depression-era customers.

Gregor was based at Hangar B at Roosevelt Field in New York. As there was only one GR-1 aircraft built, this is the one seen parked at the Gregor Hangar at Roosevelt Field in a previous photo.

While at Gregor Aircraft Corporation, Gregor received US patent #1,747,001 in 1930 for a cockpit-controlled wing-tip aileron device to help overcome stalling, but there is no record of this ever showing up on any wing-tips.

FDB-1 :

robust interplane device combined with two other struts and

eliminated the use of wire braces completely.

Similar in size and dimensions to Grumman's F2F Navy fighter and also

designed to operate from aircraft carriers

designed as a dual fighter/bomber,

designed by Michael Gregor

empty weight of 2,880 lb and a

gross of 4,100 lb.

tail-wheel undercarriage

As in many other gull wing fighters, pilot's view while flying straight and level was excellent, but marginal when landing and extremely poor when looking downward during that critical phase.

Hydraulically operated landing gear

landing gear retracted flush into large wells on either side of fuselage, ahead of the lower wing.

Twenty-eight foot span top wing featured nearly full span slats measuring 10 ft (3 m) per side,

all-metal split flaps of 4 ft (1 m), 3 in per side, positioned between root and ailerons on top wing.

Bottom wing span of 23 ft (7 m), 10 in also incorporated longer split flaps of 7 ft (2 m), 9 in per side.

## Notes on "Civil Aviation"

Like many a Soviet and Polish contemporary that had preceded it, biplanes as well as high-wing monoplanes – the center section of the top wing on Gregor's trim fighter had a gull-wing configuration, gull-wing center section attached to the fuselage at right angles for less drag and to afford improved visibility - particularly straight ahead in level flight.

all-metal construction,  
monocoque construction. circular cross section, flush-riveted, stressed skin fuseage  
retractable undercarriage,  
flush riveting and  
gull wing shaped upper wing.

For a biplane, the Gregor was exceptionally sleek, yet robust. It had a modern monocoque shell construction.

Aluminum Ribs and fabric skinned wings.

The compact 21 ft (6 m), 8 in fuselage of the Model 10 FDB-I covered by flush-riveted, stressed skin.

Wings :

metal spars

metal ribs

wings fabric covered behind the fwd spar .

substantial faired "V" interlane struts.

Empennage

metal-framed control surfaces were also fabric covered.

An anticipated range of 985 miles (1,585 km) was based on 95 gallons of fuel carried in a pair of semicircular-shaped tanks mounted side-by-side in the fuselage, between the wheel wells.

The structure was extremely robust and capable of withstanding stress forces 60 percent above requirements.

A pair of fuselage-mounted .50 cal. machine guns, synchronized to fire through the Hamilton Standard's nine ft propeller arc,

armament was never installed.

Provision for two 116 lb bombs - one under each lower wing.

Streamlining on the FDB-1 was accentuated.

The engine was snugly faired into a NACA cowling reminiscent of earlier Seversky fighter designs, also heavily influenced by Gregor, who left that company early in 1937.

The rearward sliding center section of cockpit's canopy, spacious for such a small airframe, was a unique Gregor innovation.

The FDB-1 clean lines partly were accomplished by the attachment and support of wings via substantial faired "V" interlane struts.

Flying and landing wires and cables were replaced by a single faired strut running between the root of the top wing rear spar and the foot of the "V" strut where it joins the lower wing at its front spar.

Pushrod actuated flight control surfaces, except for the rudder

rudder was partially operated by cables.

The cockpit and the control ergonomics were designed around the six foot Adye, and proved to be difficult to use for shorter pilots who flew it.

huge perspex canopy gave a tremendous field of vision in all directions... save forward where the high mounted gull-style wing impeded view .

December 1938 roll-out in Fort William.

CF-BMB, the letters embossed in white over a high gloss metallic dark gray paint job, the dual purpose aircraft's only other markings were ten horizontal white bands on its rudder.

Early in 1938, in a spirit of Commonwealth cooperation, a wooden model of Gregor's new Model 10 fighter was sent to Hawker Aircraft's wind tunnel facility at Kingston upon Thames, England.

Manufacture of the prototype began at Thunder Bay, on the north shore of Lake Superior, shortly thereafter.

The aircraft, c/n 201, was completed by mid-December 1938.

first flight test on 17 December 1938. expressing enthusiasm over its maneuverability, Ayde warned that the controls were far too sensitive and the angles of the lowered flaps too great.

His assessment was correct; on a subsequent landing, the prototype flipped on its back. the upper gull wing was a major defect as on takeoff and landing, a pilot's vision was severely limited downward and forward.

Ted Smith who tested the FDB-1 in 1941 was more succinct when describing visibility over the gull wing, "blind as hell."

## Notes on "Civil Aviation"

Among the new devices incorporated within the FDB-1 was an anti-spin parachute in its tail cone. The pilot activated the parachute from the cockpit by a three-position switch. The first opened the cone, the second deployed the chute behind the aircraft, and the third released the connecting cable.

Recorded top speed was only 261 mph (420 km/h) at 13,100 ft (3,990 m), with the old P&W R-1535-72 engine of 700 hp, which had powered the Grumman F2F-1. But that aircraft, with a slightly lower empty weight, had only reached a top speed of 230 mph (370 km/h). With the installation of an improved P&W R-1535-SB4-G of 750 hp, top speed was expected to rise to 300 mph (500 km/h). Meanwhile, Gregor had already programmed his fighter to accept the 1200 hp. P&W R-1830 Twin Wasp then being installed in Grumman's new monoplane fighter, the XF4F-3; and with it, he fully anticipated a top speed of 365 mph (587 km/h). and aircraft was highly maneuverable. Initial rate of climb was an exceptional 3,500 ft (1,070 m). per min, compared to Grumman F2F's 2,050 ft (625 m) per min. with same engine. Service ceiling was estimated at 32,000 ft (9,800 m), 5,000 ft (1,520 m) higher than the F2F's. FDB-1 had a cruise of 205 mph (330 km/h), a low-speed capability of 72 mph (116 km/h) clean and, with flaps and slats open, 58 mph (93 km/h). All these figures were reached without armament, ammunition, armor plate and other military equipment including self-sealing fuel tanks.

Designed, built and tested in less than eight months, the FDB-1 Model 10 was sent to Saint-Hubert Air Base, near Montreal, for preliminary service testing with the Royal Canadian Air Force. After extensive trials, pilot evaluations complained of severe canopy vibration at speed and during strenuous aerobatics, and it was recommended that all testing be restricted until this bothersome defect had been remedied. Unfortunately for Gregor and Can-Car, further tests undertaken by the RCAF showed that his first projections were extremely optimistic and doubted further refinements would make a difference. Nevertheless, the FDB-1 did demonstrate amazing maneuverability;

below 15,000 ft (4,600 m), in spite of an adversary's superior speed, no contemporary single-seat, low-wing monoplane could successfully engage Gregor's design which climbed like a "homesick angel," an initial rate of climb 3,500 ft (1,070 m) per min, one third better than the new Hurricane and Spitfire.

Test pilot Ted Smith thought that the FDB-1 was intended for "mountain" fighting once he sampled its phenomenal climbing ability.

Sadly, like the Avro Arrow some twenty years later, it was a failure for reasons beyond its capabilities.

Canada's only successful indigenous fighter aircraft design was the big all weather interceptor known as the Cf-100 Canuck.

Can-Car entered the Model 10 in the January 1940 New York-to-Miami air race.

Shortly after takeoff, a lack of oil pressure forced the FDB-1 to land in New Jersey, thereby disqualifying it.

Two months later, during testing, its landing gear collapsed at Saint-Hubert.

Although Mexican authorities were interested in the aircraft, the Canadian government refused an export license and there were no other prospective customers for a biplane fighter in an age of monoplanes.

In a fit of pique, Gregor was quoted as saying: "They'll start this war with monoplanes, but they'll finish it with biplanes." He was wrong. Neither his prediction nor his aircraft were to survive the test of time.

After several years of sitting forlornly in storage, the Model 10 FDB-1 was destroyed in a hangar fire at Montreal's Cartierville Airport, and Michael Gregor swiftly followed it into obscurity.

1939 : Robert Hunter - receives Air Engineer certificate. (CPA, RCAF, US air services in Edmonton, and RCMP)

15 May 1939 : Monocoupe 90A fuel capacity expanded to 160 gallons, registration SE-AGM first aircraft to land at the airport from outside Newfoundland arrived at the Newfoundland /Gander Airport from Bangor, Maine. Pilot Charles Backman delivering the aircraft to owner Mr. Gunner in Leksand, Sweden. Backman in SE-AGM is the first attempt at a transatlantic crossing from Gander.. Charles Backman lies to Gander Airport officials about the nature of his flight in order to receive permission to take off. He departs Gander for Stockholm, Sweden via the Great Circle Route the next morning with no radio and a food supply consisting of a few sandwiches, a thermos of tea and is never heard of again. <sup>233</sup>

1939 : RAF HEADQUARTERS AND LIAISON OFFICERS IN THE UNITED KINGDOM (AF List of 1940)  
DEPARTMENT of The PERMANENT UNDER-SECRETARY OF STATE FOR AIR

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<sup>233</sup> Charles Backman - Gander's First Overseas Flight by J. Pinsent : Source: F. Tibbo's History of Gander, [Phil Mosher http://www.ganderairporthistoricalsociety.org/html/thirtys/Backman.htm](http://www.ganderairporthistoricalsociety.org/html/thirtys/Backman.htm)

## Notes on "Civil Aviation"



RAF Officers on Mission or Seconded to Canada :

Principal Officer : H. A. Jones, M.C. (on Mission)

Senior Staff Officer : G. W. Dyke (on Mission)

Senior Accounts Officer : F. C. Fayers (on Mission)

General Duties Branch:

Squadron Leaders:

Kenneth James Mellor (Seconded 19.8.39)

Richard Evenor Dupont (Seconded 19.8.39)

Flight Lieutenants:

Desmond John McGlinn (Seconded 19.8.39)

Walter Samuel Leslie Smallman (Seconded 19.8.39)

Kenneth John McDonald (Seconded to Canada, 19.8.39)

Technical Branch:

Armament Officer : Thomas Joseph Albert Cresswell (Seconded 19.8.39)

Administrative - and Special Duties Branch (for Special Duties)

### AIR FORCES OF THE DOMINIONS

#### HEADQUARTERS AND LIAISON OFFICERS IN THE UNITED KINGDOM

Officers From CANADA 1940

Royal Canadian Air Force in Great Britain.

Address : 2, Cockspur St., S.W 1

Air Officer Commanding : Air Commodore G. V. Walsh, M.B.E., p.s.a.

Senior Air Staff Officer : Wing Commander A. P. Campbell, p.s.a.

Senior Air Staff:

Squadron Leader : W. I. Clements

Flying Officer : H. P. V. Massey

Technical Staff Officer : Flight Lieutenant . A. Easton.

Senior Personnel Staff Officer : not filled

Squadron Leader R. H. Foss.

Personnel Staff :

Squadron Leader R. H. Foss.

Flight Lieutenant W. H. Shroeder

Flying Officer T. H. Spear.

## Notes on "Civil Aviation"

Senior Equipment Staff Officer : Squadron Leader J. H. Ferguson.  
Equipment Staff : Flying Officer F. R. A. Girardot.  
Principal Medical Officer: Lieutenant-Colonel K. A Hunter.  
Medical Officer : Major E. J. Young.  
Command Dental Officer : Major F. R. Drewry.  
Officer i/c Records : Flight Lieutenant W. A. Dicks.  
Records Staff : Flying Officer C. J. McKenzie.  
Staff Officer : J. J. A. Crozier.

September 1939 : Ernest L. Janney reportedly sent a message to Ottawa: "Am still full of the old pep—let me know what I can do."

1939 : Amelia Earhart officially declared dead.

1939 : Government awards contracts to 17 civilian flying clubs to begin instructor preparation.

1939 : British Overseas Airways Corporation (BOAC) formed.

March 1939 : Description of the airworthiness system under the A.R.B. pertaining to a company designing and constructing civil aircraft. (Dr. Roxbee Cox)

- A. The firm would apply to the A.R.B. for approval of its design organisation.
  - A. Officers of the A.R.B. would inspect the firm's design organisation and recommend to the A.R.B. that approval be granted, possibly suggesting certain amendments of the design organisation first.
  - B. Approval of the firm's design organisation would mean that the firm's design organisation was considered competent to report the results of its design investigation.
  - C. The firm's design staff would be expected to discuss its design assumptions and methods with the A.R.B.
  - D. The firm's design staff would not expect the A.R.B. to check their calculations
- B. The firm would apply to the A.R.B. for approval of its inspection organisations.
  - A. Officers of the A.R.B. would inspect the firm's inspection organisations and recommend to the A.R.B. that approval be granted, possibly suggesting certain amendments of the inspection organisation first.
  - B. Approval of the firm's inspection organisation would mean that the firm's inspection organisation was considered competent to inspect construction under the general supervision of the Board's surveyors.
- C. The A.R.B. would expect the firm to supply a "type record." A "type record" is a reference document / set of documents which includes:
  - A. drawings,
  - B. calculations
  - C. tests,
  - D. describes the design,
  - E. indicates the reserve strengths of structural members,
  - F. and gives such other information as is necessary to prove that the design meets A.R.B. / Air Ministry requirements.
- D. While proceeding with a particular design, the firm would be expected to discuss assumptions and methods with A.R.B. officers
- E. While proceeding with a particular design, the firm would be expected to keep in touch with the A.R.B. during the progress of calculations and any tests which might be necessary.
- F. Construction would proceed under the supervision of A.R.B. surveyors.

In conclusion Dr. Roxbee Cox asked those present to express their views on any particular aspect of the flight trials which they might consider important, and asked if they were satisfied with the present spinning tests, in which recovery must be made in two turns after spinning four turns; Did they think that spinning tests should be made at all on aeroplanes in the "normal" category?

CAPT. F. DIGBY asked what the A.R.B. was doing about the question of ice formation in the carburetter. He thought it was time something was done.



## Notes on "Civil Aviation"

MR. J. LANKESTER PARKER - recently joined the G.A.P.A.N.— thought a great deal of unnecessary work was being done on spinning and stalling, and asked what "stalling" meant.

MR. R. A. C. BRIE pleaded guilty to having an anti-stall kink. He urged the A.R.B. to consider not only how many turns a machine should do in the spin and in the recovery, but also possible ways of avoiding the spin starting at all.

MR. N. H. WOODHEAD asked for a definition of "airworthiness." He thought it possible that the pilot's conception might not be the same as that of, the designer or constructor. He also pleaded for a simpler presentation of airworthiness mathematical problems in the technical Press. [When we get around to it, we will present Mr. Woodhead with a nice little book on Maths, without Tears.—ED.] He failed to understand why the Board's inspection was limited to machines of 10,000 lb. weight and ten passengers. With reference to "approved" firms he thought that if a firm was approved it should be approved and left to deal with its own inspection. [That is a point of view which Flight put forward more than once when the "approved" "scheme" (Programme) first came into being.

CAPT. R. C. PRESTON thought the work and position of the Ground Engineer had been inadequately recognised during the evening's debate. He related an experience he had last year, on a flight to Edinburgh. It had caused him some trepidation as it followed closely on the first renewal of his C. of A by the A.R.B. instead of by the A.I.D. He asked for close liaison between the technical staff and the working Ground Engineer.

In replying to the points raised in the discussion, Dr. Roxbee Cox said, to Capt. Digby, that the question of engine fading was one which was being closely examined by the Board. At present he could not say anything about possible preventive measures. Mr. Brie, had mentioned that the only sound basis for aviation was safety, and his (Dr. Roxbee Cox) own definition of airworthiness was "safety".

Dr. Roxbee Cox agreed with Capt. Cummins and others that it was up to all to collaborate with a view to making aeroplanes safe. Safety should be aimed at, even at the expense of performance and immediate profit. "If," Dr. Roxbee Cox said, "safety means carrying one less passenger, let us carry one less passenger."

In reply to Mr. Woodhead, Dr. Roxbee Cox said that he had recently had a talk with an eminent Dutch scientist who feared that accidents might have been caused in the past because certain warnings which he had expressed in too technical language had not been understood. He thought the reason for drawing the line at 10,000 lb. gross weight and ten passengers was that this quite arbitrary division was introduced because the Air Ministry felt that to pass all aircraft, irrespective of size, on to the A.R.B. would be rather a tall order. He thought there was a corresponding division in connection with ships, and that had probably been taken as a basis.— E D . J - (Flight March 1939 : pg 227)

1939 : RCAF peace time establishment : 23 squadrons total. Only 8 of 11 permanent squadrons in existence. <http://www.rcmf.museum/articles/articles-of-interest/air-force-history>. At the time the RCAF had only 4,061 officers and airmen (including the Non-permanent Force) and had only trained 45 pilots in 1939.

September 1939 : Imperial's technical expert, Major Mayo, followed up with a report to determine how the airline might select better equipment in future. This report was prefaced by a damning critique of the Short flying boats are:

- I. susceptible to damage because of a too lightly constructed hull.
- II. The hull could be reinforced but only at the expense of further payload, which was already down on specification. The rate of accidents was high in consequence of this design flaw, but even if it could be corrected,
- III. Mayo acknowledged flying boats were inherently more liable to damage.
- IV. flawed planning assumptions were inherent in the EAMS "scheme" (Programme) but were then compounded by poor engineering:
- V. the operational problems that bedevilled EAMS were due mainly to unreliable engines.
- VI. Mayo's principal recommendation - go over to landplanes, something Edgar Johnston could have told him four years earlier.

September 1939 : The Trans-Atlantic Air Service (Imperial Airways) airport at Gander, Newfoundland is complete and ready for use by civil air operations.

09 December 1939 : Order in Council establishing Regulations to control the flying of civil aircraft <sup>234</sup>  
Canada Gazette (Extra) 9th December, 1939

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<sup>234</sup> Proclamations and Orders in Council Passed under the authority of The War Measures Act R.S.C. (1927) Chap. 206 (Vol.1)

## Notes on "Civil Aviation"

P.C. 3987

AT THE GOVERNMENT HOUSE AT OTTAWA

Tuesday, the 5th day of December, 1939

present :

His Excellency

The Governor General in Council

His Excellency the Governor General in Council, on the recommendation of the Minister of Transport, and under and by virtue of the provisions of the War Measures Act, being Chapter 206 of The Revised Statutes of Canada, 1927, and notwithstanding the provisions of any other Act, Regulation or Order, is pleased to make the annexed regulations to control the flying of civil aircraft in Canada during war, to be cited as "The Defence Air Regulations, 1939," and they are hereby made and established accordingly.

H. W. LOTHROP

Assistant Clerk of the Privy Council.

1. These regulations may be cited as "The Defence Air Regulations, 1939."

2. No foreign civil aircraft shall be flown over Canada or Canadian waters, as defined by the Customs Act, unless

(a) Such aircraft is operated on an international scheduled air transport service licensed by the Minister of Transport under Part VII of The Air Regulations, 1938, or

(b) Permission for the entry of such aircraft into Canada has been given by the District Inspector of Civil Aviation of the Department of Transport into whose district it is proposed to fly such aircraft.

3. Applications for permission for entry of foreign aircraft into Canada shall be made to the following officers of the Department of Transport in respect of each of the Customs airports noted hereunder.

Moncton or Shediac, N.B.

Montreal, P.Q.

District Inspector, Air Regulations, Room 607, 400 Youville Square,

Montreal, P.Q.

Hamilton, Toronto and Windsor, Ont.

District Inspector, Air Regulations, No. 1 Montgomery Avenue, Postal

Station "K," Toronto, Ontario,

Winnipeg, Manitoba.

District Inspector, Air Regulations, 717 Dominion Public Building,

Winnipeg, Manitoba.

Lethbridge, Alberta.

District Inspector, Air Regulations, 402 Blowey-Henry Building, Jasper

Avenue, Edmonton, Alberta.

Vancouver, B.C.

District Inspector, Air Regulations, 420 Federal Building, 325 Granville

Street, Vancouver, B.C.

Permission shall be given under this regulation for daylight flying only.

4. (a) No civil aircraft, other than an aircraft licensed to operate on a scheduled air transport service, as provided under Part VII of The Air Regulations 1938, shall be flown over any of the prohibited areas set forth in Schedule A to these regulations without the permission of one of the following officers of the Department of National Defence.

—

(i) For the Province of Nova Scotia, and prohibited areas within New Brunswick, Prince Edward Island and Quebec, the Air Officer Commanding,

Eastern Air Command,

Royal Canadian Air Force,

17 South Street,

Halifax, N.S.

(ii) For prohibited areas in the Province of Ontario, the

Air Officer Commanding,

Air Training Command,

Royal Canadian Air Force,

Prudential House, 55 York Street,

## Notes on "Civil Aviation"

Toronto, Ontario.

(iii) For prohibited areas within the Provinces of Manitoba, Saskatchewan, Alberta and British Columbia, the  
Air Officer Commanding,  
Western Air Command,  
Royal Canadian Air Force,  
715 Hastings Street West,  
Vancouver, B.C.

(£>) The Pilot or other person in charge of any aircraft having obtained permission under paragraph (a) of this regulation to fly over any of the said prohibited areas shall facilitate identification of such aircraft from the ground, and to that end the following procedure shall be followed.—

(i) The aircraft shall be flown via the route specified by the officer granting permission and shall enter and leave the prohibited area within the time limits named in the permit to enter, and special recognition signals shall be made or displayed, if called for, during the flight,

(ii) The aircraft shall cross the perimeter of the prohibited area with the undercarriage in the "down" position at a height not greater than 2,000 feet above the surface of the ground or water over which the aircraft is being flown at the time,

(iii) The aircraft shall, if it is necessary to land within the prohibited area, proceed in a straight line to the landing area before circling to land,

(iv) The aircraft leaving a prohibited area shall fly clear of that area with the least possible delay after take-off.

5. No civil aircraft shall be flown at night without the permission of the Minister of Transport.

6. (1) No person shall, by means of any radio apparatus installed in any civil aircraft under a licence granted by the Minister of Transport under The Radio Act, 1938, transmit or receive any message except a message relating to the navigation of such aircraft or the safety of life; provided that the Minister may permit the transmission and reception by means of such radio apparatus of commercial messages under such conditions and restrictions as he may prescribe.

(2) No person shall transmit or receive by means of radio apparatus, installed in any civil aircraft, messages in code or in any language other than English or French.

7. No person shall give or display from any civil aircraft, in flight or on the ground, any signal not authorized by The Air Regulations, 1938.

8. No arms or munitions of war or explosives, other than explosives authorized by the Minister of Transport to be used for signal purposes, shall be carried in a civil aircraft without the permission of the Minister of Transport.

9. No aerial photographs shall be taken from any civil aircraft without permission of the Minister of Transport, nor shall any photographic apparatus, plates or films be carried in any civil aircraft except as baggage or express, in which case such apparatus, plates or films shall be locked in a compartment of the aircraft separate from the passengers.

10. In addition to the documents required under paragraph 9 of Part VIII of The Air Regulations, 1938, every civil aircraft in flight in Canada, and every aircraft entering Canada on a scheduled air transport service shall have on board a written record showing:-

(a) The nationality of each passenger and each member of the crew;

(b) The immediate and ultimate destination of each passenger;

(c) The nature, place of origin and destination, and the name and address of the consignor and consignee of all cargo carried by such aircraft.

11. *Every licence or certificate issued* under The Air Regulations, 1938, to:

1. a pilot of other than British nationality,

2. *an air engineer of other than British nationality*

3. a pilot of the nationality of any power allied or associated with His Majesty in the prosecution of the war which commenced on September 10, 1939,

4. *an air engineer of the nationality of any power allied or associated with His Majesty in the prosecution of the war* which commenced on September 10, 1939,

*shall be suspended* upon the coming into force of these regulations *unless, in the opinion of the Minister of Transport, it is in the national interest (of Canada) that such licence or certificate remain in force.*

## Notes on "Civil Aviation"

*12. No civil aircraft registered in Canada as a private aircraft shall be flown within or beyond Canada without permission of the Minister of Transport.*

13. No civil aircraft operating on an international scheduled air transport service, licensed under Part VII of The Air Regulations, 1938, shall depart from the air route authorized under such licence, except under stress of weather or in the interest of safety, and for the purpose of this regulation such air route shall be deemed to have a width of twenty miles with the centre line extending in a straight line between the Customs airports between which such aircraft is in flight.

14. Every pilot or other person in charge of a civil aircraft registered in Canada or any other of His Majesty's Dominions or the United Kingdom, and operating on a scheduled air transport service licensed under Part VII of The Air Regulations, 1938, and every member of the crew of such aircraft shall take and subscribe the oath of allegiance to His Majesty and the oath of secrecy contained in Schedule B to these regulations, and refusal to take and subscribe either of such oaths shall be cause for cancellation by the Minister of Transport of the licence or certificate authorizing such person to act as pilot or member of the crew of such aircraft.

15. No civil aircraft shall be flown within any of the prohibited areas set forth in Schedule A to these regulations unless such aircraft is engaged in training pilots or other personnel for the Royal Canadian Air Force, in which case the aircraft shall —

- (a) Confine its flying to such training only, and
- (6) Be coloured and marked in the manner prescribed by the Royal Canadian Air Force; and
- (c) Confine its flying to daylight only and restrict its flights to areas as close as possible to the immediate vicinity of the aerodromes from which it takes off.

16. (a) These regulations shall extend and apply to aircraft owned by and operated in the service of His Majesty in the right of Canada or of any Province of Canada or of any other of His Majesty's Dominions or of the United Kingdom, and to every pilot and other person engaged in the operation of such aircraft.

(b) Every pilot or other person in charge of a civil aircraft mentioned in the next preceding subsection of this section shall take and subscribe the oath of allegiance to His Majesty and the oath of secrecy contained in Schedule B to these regulations; and refusal to take and subscribe either of such oaths shall be cause for cancellation by the Minister of Transport of the licence or certificate authorizing such person to act as pilot or member of the crew of such aircraft.

17. Every person who operates any civil aircraft otherwise than in accordance with these regulations and any order or direction duly made or given under any of these regulations, shall be deemed to contravene these regulations.

18. Every person who contravenes or fails to comply with any of these regulations, or any order or direction duly made or given under any of these regulations, shall be guilty of an offence and shall be liable on summary conviction to a fine not exceeding five hundred dollars, or to imprisonment for a term not exceeding twelve months, or to both fine and imprisonment, but such person may, at the election of the Attorney General of Canada, be prosecuted upon indictment, and if convicted shall be liable to a fine not exceeding five thousand dollars or to imprisonment for a term not exceeding five years, or to both fine and imprisonment.

19. The Minister of Transport may arrange to warn, in any manner deemed advisable, civil aircraft flying over or across any of the prohibited areas set forth in Schedule A to these regulations that such aircraft are liable to be fired upon by any of His Majesty's Forces, without warning.

20. These regulations shall come into force upon publication thereof in the Canada Gazette.

### SCHEDULE A

#### List of Prohibited Areas

### SCHEDULE B

I, (A. B.), solemnly and sincerely swear that I will not, without lawful authority in that behalf, disclose or make known to any person any information, matter or thing which comes to my knowledge by reason of my employment as pilot of any aircraft (or otherwise as the case may be) with respect to any of the prohibited areas set forth in Schedule A to the Defence Air Regulations, 1939, or any prohibited place as defined by The Official Secrets Act, Chapter 49 of the Statutes of 1939, or any other information, matter or thing which might be directly or indirectly useful to a foreign power or which might be used for a purpose prejudicial to the public safety or the safety of the State.

## Notes on "Civil Aviation"

Published under Proclamations and Orders in Council Passed under the authority of The War Measures Act R.S.C. (1927)  
Chap. 206 (Vol.1)

P.C. 108

Certified to be a true copy of a Minute of a Meeting of the Committee of the Privy Council, approved by His Excellency the Governor General on the 13th January, 1940.

The Committee of the Privy Council have had before them a report, dated 10th January, 1940, from the Honourable C. G. Power, Convener of the Committee of the Cabinet on Legislation, stating:

—

1. That under the provisions of The War Measures Act, a large number of Orders in Council, many of them having the force of Statutes, have been passed;
2. That many of such Orders in Council need to be referred to frequently by persons interested in the subjects thereof; and
3. That it is advisable that a compilation of all such Orders in Council should be prepared and published in book form, and that all Proclamations should be included therein;

The Minister, therefore, recommends that he be authorized to undertake the compilation and publication of all Proclamations, and of all Orders in Council passed under the provisions of The War Measures Act, Chapter 206, R.S.C., 1927, having the force of Statutes; that all such Orders in Council passed between August 25, 1939, and December 31, 1939, together with all Proclamations of the same period, constitute the first volume thereof; and that the cost of this and of subsequent volumes be a charge against the moneys provided by Parliament under The War Appropriation Act, 1939.

The Committee concur in the foregoing recommendation and submit the same for approval

(Sgd.) H. W. LOTHROP,

Acting Clerk of the Privy Council.

17 December 1939 : the United Kingdom, Australia, New Zealand and Canada met in Ottawa - set up the BCATP. There was no certainty as to where Newfoundland recruits might be incorporated into the scheme. As a temporary measure, the Commission Government decided to allow persons interested in RAF training to proceed overseas with artillery drafts. Once in Britain, they were examined and trade-tested by the RAF. If not up to air force standards, they were retained by two Newfoundland artillery regiments then being formed. A total of 71 men joined the RAF by this indirect route - See more at: <https://legionmagazine.com/en/2006/11/the-flying-newfoundlanders/#sthash.Iq96YWOW.dpuf> (Canadians were thought to be better trained than their Allied colleagues but (and this was a British opinion) less disciplined, too happy-go-lucky – and more popular with women.) BCATP recruits men and boys recruited for air training. all began their training from the ground up, with no present skills or experience. four main trades, "Fitter - aero-engine mechanic" "Rigger - air frame mechanic", sheet metal worker and fabric worker: - (Mary Ziegler, We Serve That Men May Fly, (Hamilton: RCAF (WD) Association, 1974), 11-15). the technological increase corresponded with a new manpower requirement.

December 1939 : C. G. Power, Canada's Minister of Air,

Even though the RCAF could currently muster only about 4,000 men in total, the training operation would require 33,000 air force personnel, as well as 6,000 civilians. in March of 1945, 72,825 were RCAF, 42,110 RAF, 9,606 RAAF and 7,002 RNZAF. This total does not include 5,296 RAF and Fleet Air Arm personnel trained in Canada prior to July 1, 1942 when the plan was renegotiated with Britain. Nor does it include over 50,000 Canadian ground crew who received their training in the Plan or the civilians and civilian organizations which participated conspicuously, running 10 Observation Schools and 30 Elementary Flying Training Schools. Cost to train each pilot in 1940-41: \$33,000.00! (Lifting the Silence: A World War II RCAF Bomber Pilot Reunites with his Past By David Scott Smith, Sydney Percival Smith)

## Notes on "Civil Aviation"

Initially, the BCATP recruiters wanted lower rank ground crew - technicians, mechanics, electricians (Lifting the Silence: A World War II RCAF Bomber Pilot Reunites with his Past By David Scott Smith, Sydney Percival Smith) - they needed them to build up the training maintenance force!

The first group of British pilot trainees was due to begin training in mid-September 1939, but the cataclysmic events of that month overtook the plan, and the trainees never arrived in Canada. Canada's sovereignty and independence from Britain was illustrated by the fact that it was not until one week after Britain's declaration of war that Canada's own decision to go to war was taken. That date was 10 September 1939.

British Prime Minister Neville Chamberlain had made an urgent appeal to Canada for the expansion of RCAF air training establishments. The British anticipated problems in meeting air personnel requirements, and stated that Canada could best assist by concentrating on training aircrew, to set a goal of training 2000 pilots annually, to enlist skilled mechanics, and to train as many observers and air gunners as possible

Equipment had to be procured. Aircraft were at the top of the list. Some 3500 aircraft were required at once, as well as 6500 engines and sufficient spare parts. In 1939 the RCAF had only 270(124 operational) service aircraft, many of which were obsolescent and few considered front-line equipment. To help out, Avro Ansons and Fairey Battles were promised from besieged Britain but, as it turned out, only delivered sporadically.

At home the domestic aircraft industry expanded miraculously to meet the challenge. Soon Noorduyn Aviation of Montreal was producing 100 Harvards a month. And a Canadian crown corporation called Federal Aircraft was formed to oversee production of Ansons in Canada. By June 1, 1943, 1850 Canadian-built Ansons were flying, well above original targets, but at the beginning, to fill the multi-engine gap, other twin trainers were procured including Cessna Cranes and Airspeed Oxfords.

Elementary training was to be mainly in de Havilland Moths, Fleet Finches and later in Fairchild (Fleet) Cornells, most of which would be built in Canada. To train fighter pilots, the state-of-the-art North American Harvard was ordered. Until deliveries would be sufficient to meet needs some North American Yales, originally intended for now-occupied France, were delivered to Canada instead.

In the first seven months of the Plan, by March 1940, adding mostly ground tradesmen, the RCAF more than doubled its strength to 10,375 and thousands of air crew recruits were placed on waiting lists until schools and instructors were readied. Meanwhile, the record-breaking planning and construction of bases across Canada proceeded in high gear, and schools of all types were soon opening at an astounding rate, ready (or almost ready) to receive their first classes.

The organized training of a successful air crew candidate would take between 50 and 90 weeks, often depending on the demand for various types of air crew which altered at different times. After recruitment, participants were sent to one of an eventual total of seven Manning Depots for an introduction to military life. It was here their path for aerial training was determined.

Those chosen for pilot training then proceeded to one of seven Initial Training Schools (ITS) to take part in a ten-week course in pre-flight training. From here, pilot trainees were posted to one of 30 Elementary Flying Training Schools (EFTS) (operated by government-supported civilian Flying Clubs across Canada) for eight weeks of flight instruction.

After soloing on Moths or Finches and an assessment of whether pilot aptitudes would be best suited for single-engine fighter, multi-engine bomber or transport, the successful neophyte headed off to one of 29 Service Flying Training Schools (SFTS) - twenty of these were twin-engine schools- for advanced training on more powerful aircraft. It was at the successful completion of this course that pilots finally won their coveted wings.

From SFTS the pilots moved to one of seven Operational Training Units in Canada or directly to an OTU in Britain. At OTU they were introduced to the aircraft which they would eventually fly into combat.

Those not chosen to follow the pilot route, including many who "washed out" of the pilot training program, were destined to fill out operational air crews as gunners, navigators, radio operators and air engineers. This was often far from their personal aspirations. Many of these men had counted on becoming pilots. But one thing, which you learned early, was to be a team player. Especially in Bomber Command this team aspect was to be of great significance.

Besides air crew, there were 72 other trades in the air force, from "fitters" (aero-engine mechanics) and "riggers" (airframe mechanics) to cooks. All had to be trained to do their jobs efficiently and effectively. And of course it goes without saying, the

## Notes on "Civil Aviation"

contribution of many thousands of ground crew at home and in all combat theaters was invaluable. Without them, no one flies! To the tribute and everlasting credit of Canadians, the recruitment of ground crew into the RCAF was never a problem during the war, particularly after women were accepted, forming the Canadian Women's Auxiliary Air Force, later the RCAF Women's Division "WD".

The BCATP, Canada's part in a wider program called the Empire Air Training Scheme, (EATS) actually traced its distant origins to World War I. During World War I Canada -specifically Ontario- became a major center of air training for the Royal Naval Air Service (RNAS)/Royal Flying Corps (RFC) which, by April of 1918 would become the Royal Air Force (RAF). The recruitment value alone of establishing this training program in Canada was obvious. No less than 25,000 Canadian servicemen entered the air force of the "Mother Country". (Texas provided training sites as well with the subsequent siphoning of thousands of American air and ground crew into the conflict before America's official entry into the war.) But, in Canada the politics of British authority over this training program had only exacerbated the larger controversy which British control over the whole Canadian war effort had engendered.

It follows then, that as World War II loomed on the horizon, most Canadians -including the politicians- were adamant that any future Canadian war effort remain under direct Canadian control. They wanted no more Passchendaeles where, in one Great War battle, Canada took 16,000 casualties! They wanted no more conscription which, although deemed necessary to feed the War's voracious appetite for Canadian soldiers, had nearly split the country in 1917. Post-WWI Canadian consensus held, right or wrong, that hundreds of thousands of Canadians had been sacrificed unnecessarily through incompetent British leadership. Canada, it seemed, was no longer willing to participate militarily as a "colony". She preferred instead the status of equal partner with control over her own forces.

The Royal Canadian Air Force, which succeeded the Canadian Air Board and the Canadian Air Force, had been born on April 1, 1924. During the time between the wars Canada, the senior Dominion, had allowed a few Canadians to be trained or selected at home for service in the RAF, and eventually agreed to the training of a few British pilots in Canada. However, to express her new, more independent relationship with Great Britain, Canada had refused to permit any of the training conducted on Canadian soil to be under British control.

80,000 ground crew, including approximately 17,000 in the Women's Division. While the purposes and the glory of the "Plan" was training aircrew, this training could not have been carried out without the ground crew. It is generally conceded that it took ten persons on the ground to keep one in the air. The training of ground crew was just as rigorous as that of the aircrew but generally less appreciated by the general population. Ground crew consisted of everything from aero engine mechanics (fitters) and air frame mechanics (riggers), instrument technicians, administration, vehicle mechanics and drivers to cooks, service police and some in other trades and occupations. Being already a half decent mechanic meant placement in the BCATP program to become an aircraft engine mechanic. In the southern Ontario region one of the larger "initial" training sites used during the BCATP was in Galt, Ontario (now Cambridge). This school, originally opened in February of 1915, still exists as Galt Collegiate Institute. From here the pupils (and more than a few of the teachers) scattered across the country to participate in the secondary training of various disciplines. In the fall of 1941 my father proceeded to the "St Thomas No. 1 Technical Training School" in south western, Ontario where he learned how to properly maintain, repair and service aircraft engines. This school now is the "St. Thomas Psychiatric Hospital". A historical plaque currently mounted at this site reads: "RCAF TECHNICAL TRAINING SCHOOL - The only facility of its kind in Ontario during the Second World War, No. 1 Technical Training School, St. Thomas was established by the Royal Canadian Air Force in 1939 to produce skilled ground crews for active wartime service. It was housed here in this hospital complex and was operated in compliance with Canada's commitment to establish air training facilities in sites removed from the theatre of war. Equipped to handle more than 2000 students at a time, the school offered six month courses for aircraft electricians and aero-engine, airframe and instrument mechanics in addition to specialized training for fabric and sheet metal workers. When the war ended in 1945 the school was closed and the complex was returned to the Ontario Department of Health."

From St. Thomas many of the graduates went on to further "hands-on" training while also acting as service crews on the planes used to train pilots at flight schools set up at many locations across Ontario. The "bible" for RCAF Aircraft Engine Mechanics was "Aircraft Engine Maintenance for the Aircraft Mechanic". these RCAF volunteers were disbursed to their various assigned locations, with most making their way via ships sailing out of Nova Scotia to the United Kingdom for active duty. Upon arrival at their final destinations they were ("finally") assigned to their squadrons or unit locations. In the UK the fresh men from BCATP-RCAF training were given additional instruction and experience in more relative areas of their posts. Pilots trained on the specific models of aircraft they would fly, and ground crews became more acquainted with the engines and systems. Plus all were physically and mentally hardened for what was ahead, being trained more thoroughly in the use of weapons, and ways of war. The Spitfire<sup>9</sup> aircraft is sometimes called the pinnacle of evolution of prop driven fighter planes preceding the advent of jets. It is the single most recognizable classic fighter plane. Over 22,000 were flown during the era of the war in all parts of the globe.

## Notes on “Civil Aviation”

Really a small fighter by today's standard the plane measured approximately 31 feet long, a bit over 12 feet tall at its highest point (prop tip), with a wingspan of about 37 feet. It was a single engine; single seat fighter outfitted with wing mounted machine guns and small caliber cannons. The weight of the plane was at a trim 7,500+ pounds.

Manufactured by Supermarine, and boasting up to a 1700 horsepower Rolls-Royce Merlin engine (or Packard in later years), the Spitfire was capable of a comfortable cruising speed of 280 mph, with a top speed on the flat of over 400 mph and maximum ceiling of 8 miles. Range with standard fuel load was just over 400 miles in the true fighter models. Use of an auxiliary “drop” tank could extend this flying range up to 200 miles. This flight range may appear great, but do remember the speed – even with drop tanks a return to a base for refueling would be required within several hours of takeoff. The engine burned fuel at an average rate of about one gallon per minute.

Initially the Spitfire fighter models were armed with four .303 machine guns, and two 20mm Hispano cannons (120 rounds each). By D-Day these lower caliber machine guns had been replaced by two high powered .50 Browning machine guns (250 rounds each) which had armour piercing capabilities. Most had the capability of carrying a 250 pound bomb on each wing, plus a 500 pound bomb on its belly. The Mark II Gyro Gun-sight used through the European campaign gave good targeting accuracy.

With a possible flying height of 40,000 feet, the planes were equipped with oxygen breathing apparatus and storage tanks.

It was small, quick, and maneuverable with a sting – a deadly combination in those times. Imagine a hornets' nest of these coming after you – coming down out of the clouds at almost 400 miles per hour with quite accurate armaments capable of permanently disabling a locomotive or armoured vehicle traveling at full speed. All through the war the Spitfire was constantly redesigned to improve its speed, fire power, and suitability to the many tasks it handled over land, sea, and in the air. All of this being necessary to keep pace with similar programs by the foe. Dozens of different models were produced, each improving to meet the needs of the time.

All of these planes were built light to maximize speed. Very little armour plating was present. The pilot's seat did have a curved bullet proof plate in its backrest which did provide some protection.

One must consider that the technology was not as advanced, in those times, as we enjoy (or deplore sometimes) today. There was no on-board radar, or tracking systems, or “smart” weapons. Just point it, get there, find a target, attempt hitting it, and then get out as quick as possible – all the while being watchful of those attempting to make you the target. Jet aircraft was not available to the RCAF squadrons at this time – but the Germans used them near the end of the war – a picture<sup>7</sup> of a captured Heinkel jet fighter is in the collages.

In Europe the day-fighter models of the Spitfire served to be much more than a suitable choice in its role to protect ground convoys, as a bomber escort, as an armed scout aircraft, and for use in direct daylight attacks on the enemy or to scramble to defend against incoming threats. In all, a high contribution was made by the Spitfire, its pilots and crews, in hastening eventual victory while minimizing losses.

The 416 Squadron flew the Spitfire Mark VB or VC early in its days, but used mostly Mark IXC and Mark XVI models within 1944 and 1945.

The days in Normandy were long with non stop “right-now” activity. On dry days the dust generated on the airfield was horrendous “You couldn't see 20 feet in front of you” – it rose in thick clouds on every takeoff or landing, and got into, and onto, everything, everybody, everywhere, and was a major problem at times with the air intake systems of the aircraft engines. (After all, the airfields were on dirt.) Planes were in the air within one hour of rising. Each squadron within the 127 wing typically had a dozen aircraft. Not all left immediately, but were staged out quickly and selectively through the day with replacements always being readied to take off just prior to those incoming. This activity would be further complicated by planes from other than the 127 Wing dropping in to refuel, rearm or repair. On top of this would be steady regular traffic of new arrivals, supply flights, squadron planes coming home early due to problems or out of ammo, and flights bringing in and taking out the wounded.

In every aerial operation, it is essential to address the importance of the groundcrew. They are, however, frequently forgotten or receive only slight recognition for the responsibility they held. Peter Conrad (Peter Conrad, *Training For Victory*, (Saskatoon: Western Producer Prairie Books, 1989), 41) highlights the neglected role of groundcrew, stating “The best available book on the BCATP.. fails to even mention the Technical Training Station... where **45 000 groundcrew received final training.**”<sup>14</sup> The countless tasks performed by the groundcrew in the BCATP ranged from the menial items of pulling chocks and fueling and directing aircraft, to heavy maintenance, including engine overhauls and major repairs. These tasks were daily occurrences at BCATP bases due to the frequency and intensity of flying operations, and they were carried out regardless of adverse weather and plummeting temperatures.<sup>15</sup> The groundcrew role was essential and remains among the most important links that drove the BCATP - <https://lurj.org/issues/volume-1-number-1/airtraining>

What BCATP cost



## Notes on "Civil Aviation"

The original figure of \$600,000,000 for the three year plan was thrown overboard early in the summer of 1941 when the Minister for Air estimated the joint expenditure of all countries to March 31, 1943, (the date the agreement will have to be renewed) would be \$824,000,000, plus \$28,000,000 for the completion of training pupils then in advanced schools.

A rough breakdown of the \$824 million:

- (a) United Kingdom's contributions in kind (aircraft, engines and spares) \$194,000,000
  - (b) Canada (cost of Recruiting and Manning Depots, Initial Training and Elementary Training of Canadian pupils) \$120,000,000
  - (c) Costs shared by Canada, Australia and New Zealand (of advanced training) \$510,000,000
- Total \$824,000,000

The final cost of the B.C.A.T.P. ended up being \$2,231,129,039.26 of which Canada contributed \$1,617,958,108.79.

Britain's Sir Winston Churchill referred to "The Plan" as Canada's greatest contribution to the Allied victory in WW II.

U.S President Roosevelt referred to Canada as "The Aerodrome of Democracy".

By 1945 the Royal Canadian Air Force was worlds 4th largest Air Force.

The average annual manufacturing output during the five years up to 1939 was about 40 airplanes, and the industry employed only 1,000 workers.

By 1943 aircraft production had become one of the outstanding industries of the country. The annual rate of output had reached 4,000 planes and more than 120,000 men and women were employed. By the end of May, 1945, a total of 15,905 aircraft had been produced.

The average unit weight of aircraft produced in 1940 was 1,920 pounds. by September, 1944, the average had reached 7,775 pounds and in 1945 was still climbing. The weights given are exclusive of aircraft engines, since no such engines have been produced in Canada. Of major importance to the allied war effort has been the production in Canada of aircraft components. Millions of dollars worth of components for the famous B-29 or Super-fortress and for other combat aircraft have been made in Canada for United States prime contractors. In addition Canada has supplied great quantities of

aircraft woods and other raw materials for airplanes manufactured in the United Kingdom.

Canada also assembled 3,200 aircraft from the United Kingdom and purchased more than 3,000 in the United States. A total of 5,000 service aircraft built in Canada has been delivered

to the United Nations in various theatres of war. In the first five months of 1945 production amounted to 1,209 airplanes, including 175 Lancasters, 166 Mosquito bombers, 183 Mosquito fighter bombers, 22 Mosquito trainers, 53 P.B.Y. flying boats and amphibians, 296 Curtiss dive-bombers, 77 Norsemen, 146 Harvards, one York and 90 Ansons. To keep its more than 12,000 service and training airplanes in the air, Canada developed an aircraft repair and overhaul program which operated in 20 major plants, assisted by 65 smaller contractors and 50 ancillary firms. The main contractors were strategically located from coast to coast and could handle any type of plane.

At one time this overhaul industry employed 18,000 men and women and occupied 2,000,000 square feet of factory floor space.

In 1943 a Canadian trans-Atlantic air service was instituted to carry armed forces mail and official passengers between Canada and the United Kingdom. At first only one aircraft was in service but by the end of 1944 five were operating on a tri-weekly service. All planes and equipment are owned by the Canadian government. As contracting operator Trans-Canada Air Lines is paid expenses for operations. The Northwest Staging Route, connecting Edmonton by air with Whitehorse, Yukon Territory, had been completed to the point of being in service before December, 1941.

Numerous improvements have been made since. New airports have also been constructed between Fort St. John and Vancouver with the object of establishing an airline service between Vancouver and Whitehorse.

The Northwest Staging Route now permits the operation of day and night service in all weather from North Vancouver and Edmonton to Whitehorse.

Two very large airports were constructed to facilitate the ferrying of aircraft from North America to Europe. One, at Dorval outside Montreal, Quebec, was constructed as the chief point of embarkation to the United Kingdom; the other, at Goose Bay, Labrador, as an alternative to the airport in Newfoundland.

Canada and the United States jointly constructed airports on

the Northeast Staging Route to enable aircraft to be ferried to Europe by way of The Pas and Churchill, Manitoba. Canada has reimbursed the United States for its expenditures in the construction of both northeast and northwest air routes. Exports to the United States signified under the miscellaneous group also reached a record level in 1943 - aircraft, \$26,000,000.

export values in millions : 1939 = 0.4, 1940 = 6.0, 1941 = 20.0, 1942 27.0, 1943 = 44.8 1944 = 107.1 source : CANADA AT WAR - Recapitulation Issue : ISSUED BY WARTIME INFORMATION BOARD, OTTAWA  
160M JULY, 45 (W.I.B. P-103) K.P. 9966 PRINTED IN CANADA

## Notes on "Civil Aviation"

1939 : EAMS and Empire flying boats / imperial airways charged with preventing a repetition of the 1938 debacle. The bankruptcy of British civil aviation was now such that this civil service committee could think of nothing more substantial than to bring in the RAF to help shift the Christmas load, thereby returning policy to the standard set in 1921 when the RAF first carried mail across the Middle East. The years before 1939 are remembered wistfully as a Golden Age of British civil aviation. Contemporary works on the Empire flying boats celebrate them as 'the most efficient form of international transport available', although engineering historians have more accurately labelled them 'iron turkeys with a paper bottom'.<sup>59</sup> A discrepancy between nostalgia and harsh reality also characterises accounts of the "scheme" (Programme) as a whole, and not just its operating equipment. (The Journal of Transport History 28/1 "A gentlemen's club in the clouds - Reassessing the Empire Air Mail Scheme, 1933-1939" by Peter Ewer)

According to Sir Sefton Brancker, Director General for Civil Aviation within the British Air Ministry, Germany led Europe in terms of the development of civil aviation from the mid-1920s onwards (Myerscough, J. (1985), 'Airport Provision in the Inter-War Years', *Journal of Contemporary History*, p. 48)

1939 : UK AID was an engineering organisation, mainly civilian, but in part RAF. Primary purpose : ensure that all RAF and RN equipment manufactured or repaired by contractors and by RAF maintenance units was constructed to approved designs and was fit and serviceable for issue to the users, the operational and training units of the RAF and RN.

For administrative and technical control the staff of AID was divided into six divisions, namely aircraft, armament, engines, aircraft equipment, materials and general stores, the members of each division being specialists in the appropriate technical work.

1939 : With the outbreak of hostilities, peace-time civil air transport and the activities of the *International Air Traffic Association* are placed on hold.

1939 : Trans-Canada Air Lines  
carries 22,322 passengers - averaging 72 pax/day (6 day weeks assumed)  
carried nearly half a million pounds of regular Air-Mail  
carried 49,899 pounds of Express Air Mail

31 December 1936 : Licensed Air Engineers in Canada ??? source ref :  
31 December 1937 : Licensed Air Engineers in Canada 595 source ref : pg 266 "The Engineering Journal" May 1943  
31 December 1938 : Licensed Air Engineers in Canada 643 source ref : pg 266 "The Engineering Journal" May 1943  
31 December 1939 : Licensed Air Engineers in Canada 722 source ref : pg 266 "The Engineering Journal" May 1943  
31 December 1940 : Licensed Air Engineers in Canada 822 source ref : pg 266 "The Engineering Journal" May 1943  
31 December 1941 : Licensed Air Engineers in Canada 832 source ref : pg 266 "The Engineering Journal" May 1943  
31 December 1932 : Licensed Air Engineers in Canada 944 source ref : pg 266 "The Engineering Journal" May 1943

### CANADIAN AVIATION - 1940

May 1940 : Sir Archibald Sinclair - Secretary of State for Air

1940 : separate Royal Canadian Air Force Act enacted.

The world's foremost prophet of northern development and of northern aviation was Vilhjalmur Stefansson, whose *Northward Course of Empire*, published in 1922, made many predictions which, then widely ridiculed as fantastic, are coming true today.\* One of his sympathizers in the Government was J. A. Wilson, now Director of Air Services in the Department of Transport. Wilson strongly advocated sending Logan back to the Eastern Arctic at the head of an aerial reconnaissance expedition. This would have had to be carried out under •As early as 1917, in a letter written at Melville Island, Stefansson urged Sir Robert Borden, then Prime Minister of Canada, to institute an official examination of transpolar air routes.<sup>235</sup>

## Notes on "Civil Aviation"

1940 : Croil serves as the Inspector-General of the RCAF. [Air Marshal George Mitchell Croil CBE, AFC](#) (June 5, 1893 – April 8, 1959) was a [Royal Flying Corps](#) pilot during [World War I](#) who went on to become the first [Chief of the Air Staff](#) of the [Royal Canadian Air Force](#). He was asked to step down as CAS in 1940 and Croil then served as the Inspector-General of the RCAF [1] until his retirement in 1944 [2] when the post of Inspector General was abolished. [3]

### Early and family life

George Mitchell Croil was born on June 5, 1893 in [Milwaukee, Wisconsin, United States of America](#). His parents, Thomas Croil and Christian Mitchell, were Scottish immigrants to the United States. George Mitchell Croil was a [first cousin](#) of US Brigadier General [Billy Mitchell](#), a pioneer of American military aviation. [4]

When Croil was 11 years old, he moved, with his parents, to [Montreal](#) in [Quebec](#) where he attended the Westmount Academy from 1903 to 1907. From 1907 to 1911, Croil lived in Scotland, studying at [Robert Gordon's College](#) in [Aberdeen](#). Remaining in Great Britain, Croil studied Civil Engineering for the next two years. [4]

In 1912 Croil moved to [Ratnapura, Ceylon](#) where he gained employment as an assistant superintendent with the Mahawale Tea and Rubber Estate. His duties included overseeing the work routines of 700 plantation workers and ensuring that the machinery was kept running. [4]

### World War I

With the outbreak of [World War I](#), Croil enlisted in the [Gordon Highlanders](#) as a private soldier. [5] He was soon commissioned, serving as a machine gun officer in the 5th Battalion of the Gordon Highlanders. In January 1915 he received an acting promotion to [captain](#) and took up duties as a company commander. [4]

In May 1916, Croil was detached to the [Royal Flying Corps](#) and undertook a two-month period of flying training. On successfully completing the course and receiving his [pilot's wings](#) in July 1916, [4] Croil was seconded from the Gordon Highlanders to the [Royal Flying Corps](#) with the temporary rank of captain. [6]

### Inter-war service

Croil became a member of the Canadian Air Board in June 1920 and played a key role in the establishment of air bases at Morley and High River in Alberta. [4]

On the establishment of the [Royal Canadian Air Force](#) in 1924, Croil was one its founder officers. Although the RCAF was described as an [air force](#) and had a separate rank structure in line with the British air force, the RCAF was under the authority of the [Canadian Army](#). The following year, in 1925, Croil was posted to Great Britain where he served as a [liaison officer](#) with the [Royal Air Force](#). Croil also took a course of training at the [RAF Staff College, Andover](#). [2]

Returning to Canada by 1928, Croil was appointed Station Commander of [RCAF Station Borden](#) in Ontario which at that time was one of a very few RCAF training bases. Returning to Great Britain for further advanced training, Croil attended the [Imperial Defence College](#). Crossing back across the Atlantic once more, in 1934 Croil was appointed Senior Air Officer with the RCAF making him the head of the RCAF. In 1938, Croil succeeded in obtaining the RCAF's independence from the Army and accordingly his post was upgraded to [Chief of the Air Staff](#). Croil then only reported to the [Minister of National Defence](#). [4]

### World War II

Croil remained as Chief of the Air Staff until 1940 when he was replaced. He then served as Inspector-General of the Royal Canadian Air Force until 1944.

Croil died on April 8, 1959, in [Vancouver, British Columbia](#)

May 1940 : Lord Dowding writes the Air Ministry stating that not one more fighter aircraft be sent to France as it would cause the total, complete and irremediable defeat of England.

1940 : Royal Canadian Air Force Act of 1940 retains the disciplinary provisions of the British Air Force Act.

1940 : RCAF trades training : Airmen trained in two trades: radio operator and/or air gunner. At the start of the war, bombers had only two engines, were much simpler to operate and had a smaller crew. Airmen were expected to accumulate knowledge and responsibility for more than one function.

1940 : RCAF initially trained its wireless operators as air gunners, giving them the combined designation of "WO/AG".

As twin engined bombers were replaced by 4 engined bombers (Stirling, Halifax and Lancaster) with multiple and more complex flight, defensive and communication systems, with their seven crew members, the wireless operators as air gunners roles were

## Notes on "Civil Aviation"

separated as they required full-time specialists in each post. Dual-function training was retained as it was now prudent that each specialist be able to be replaced in an emergency so that the mission could proceed or safe return be made possible.

There was also a standard aptitude test — the RCAF Classification Test. After 4 or 5 weeks a Selection Committee decides whether the recruit would be trained for aircrew or groundcrew. the BCAT Plan required that recruits pass through multiple levels of testing and schooling before they were posted.

The "wireless course" is six months long and is the longest course offered in all the services.

Wireless mechanics had to learn how to assemble a receiver and a transmitter and understand / perform the maintenance of them. If an airman fails to qualify at his original choice of career in the Air Force, he is remustered (re-classified / re-assigned) into another trade by being sent to a Composite Training School.

1940 : G.A. Thompson, General manager of Canadian Airways Limited, writes the Chief of Air Services to complain about technical / maintenance personnel "poaching" by the RCAF and continued to complain of personnel shortages after the British Commonwealth Air Training Plan began to fall into stride: In order to fulfill our contract to operate No. 2 Air Observers' School at Edmonton it will be necessary for us to draw on Canadian Airways' engineers for key positions and for training of other mechanics at the Observers' School. This means that on some of our longer runs it will be difficult for us to send as crew men licenced air engineers to certify the aircraft and engine airworthy each day as required by Air Regulations.... To take care of this situation might we suggest that our experienced pilots be granted temporary air engineers' certificates for the duration of the war, so that they will be in a position to sign out any aircraft and will only require a helper with them as crew men.... This would materially assist not only Canadian Airways northern operations but most probably the operations of all companies operating in the north.... I understand a very similar arrangement has been made to provide B and D licensed air engineers for the elementary pilots training schools.... " - *Library and Archives of Canada* RG 12 Volume 1378 File 5258-118 volume 3; 28 June 1940; RG 12 Volume 1377 File 5258-118 volume 2; 2 July 1940; Memo, 25 October 1940

September, 1939 : Royal Canadian Air Force strength : 4,061 officers and airmen.

1940 : At first virtually all the Canadians trained as BCATP ground crew were required to staff B.C.A.T.P. schools and airfields across Canada and could not be spared to man Canadian squadrons overseas (whose ground crew was almost entirely found by the R.A.F) Production of ground crew increased from 5,917 in 1940 to 20,046 in 1941, about 10% of whom proceeded overseas as the beginning of a force which had increased to 35,369 by the conclusion of the European phase of the war. Included in these latter figures were approximately 5,000 radar specialists despatched overseas for service with the R.A.F. Of the graduates of ground crew courses enumerated in Table 23 approximately 97% were Canadians. (Source ref : Canada at War no.45 1945)

Graduates of the BCATP "Ground Crew" training program			
Year	Total	Staff Positions	
<b>1940</b>	5917	8183	
<b>1941</b>	20046	14098	
<b>1942</b>	30682	14519	
<b>1943</b>	29140	15012	
<b>1944</b>	19396	2332	
<b>1945 (As of march 31)</b>	1333		
<b>Total</b>	106514		

194? : Debate in Canadian Parliament results in decision to not build aircraft engines in Canada during the war

31 December 1936 : Licensed Air Engineers in Canada ??? source ref :

31 December 1937 : Licensed Air Engineers in Canada 595 source ref : pg 266 "The Engineering Journal" May 1943

31 December 1938 : Licensed Air Engineers in Canada 643 source ref : pg 266 "The Engineering Journal" May 1943

31 December 1939 : Licensed Air Engineers in Canada 722 source ref : pg 266 "The Engineering Journal" May 1943

## Notes on "Civil Aviation"

31 December 1940 : Licensed Air Engineers in Canada 822 source ref : pg 266 "The Engineering Journal" May 1943  
31 December 1941 : Licensed Air Engineers in Canada 832 source ref : pg 266 "The Engineering Journal" May 1943  
31 December 1932 : Licensed Air Engineers in Canada 944 source ref : pg 266 "The Engineering Journal" May 1943

### CANADIAN AVIATION - 1941

14 February 1941 : a critical shortage of Canadian engineering, scientific and technical personnel was met by setting up the Bureau of Technical Personnel - Labour Minister McLarty, director to be E.M.Little (gen mgr of Anglo-Canadian pulp and paper and Gaspesia Sulphite Co) (Source Montreal Gazette feb 15 1941) . The Bureau of Technical Personnel evolved into an agency for the supply and control of technical personnel within the armed forces and essential civilian industry. (see also" Canada's Greatest Wartime Muddle: National Selective Service and the Mobilization of Human Resources during World War II" By Michael D. Stevenson - case studies show that mobilization officials achieved only a limited number of their regulatory goals and that Ottawa's attempt to organize and allocate the nation's military and civilian human resources on a rational, orderly, and efficient scale was largely ineffective) The Canadian National Selective Service "NSS" effectively governs civilian trades and trades persons.

17 - 25 February 1941 : Major Sir Frederick Banting - Royal Canadian Medical Corps arrives Gander on Hudson T-9449 en route to England via the Atlantic Ferry Organization (AT-FER-O) forerunner to Royal Air Force Transport Command. He was the second man to be so carried on an Atlantic ferry. 20 Feb. thirty minutes after departure Gander, the aircraft requests a bearing. 24 Feb. wreckage of T-9449 located 40 miles north-east Gander and ten miles inland from Musgrave Harbour. Pilot Officer Byrd - navigator, Royal Air Force, Snailham - Radio Officer and passenger, Sir Frederick Banting all dead, Captain Joseph Mackey - pilot survived. Airport engineer Jerome Coulombe in charge of checking the aircraft for mechanical safety testified at the civilian enquiry, "To my knowledge, there was no special guard put on this machine." He added, "I can't say whether the machine was in the hangar the first night it arrived or not." The enquiry also determined that mechanical checks were performed on the Hudson and determined the Hudson was airworthy, HOWEVER, no one signed the inspection sheet and no certificate of airworthiness was completed. The civilian enquiry found so many holes in airport security that Canadian Pacific Railway, contracted to manage the ferry operation, hired a new maintenance superintendent and reorganized its inspection system. Banting seemed concerned with the lack of security. He wrote in his diary, "An agent could certainly play the devil with the final checking, the hangar is overcrowded and planes have to be left outside and there is continual moving of planes. Magistrate Malcolm Hollett conducted a civilian inquiry shortly after the crash. The inquiry revealed flaws in the security at Newfoundland Airport and determined the cause of death. In Banting's case it was attributed to concussion and shock. That inquiry did not examine why the engines failed. That was left to the military - three-member military enquiry, chaired by Air Commodore George Walsh of the RCAF met in Gander in early March, 1941 and concluded their work on March 22. The military ensured right from the start that only innocuous bits of information would be released. An excerpt from the minutes of the meeting of the Commission of Government of Newfoundland dated April 2, 1941, stated: "The Commissioner will issue a Press Communique stating that the report has been received and that its findings relate to purely technical matters which it is not in the public interest to make public." That statement was, no doubt, dictated by the military brass. The military enquiry's official dispatch was printed in the Evening Telegram: "The report of the Court Inquiry has been received and examined. It has been decided by this Government that publication of the contents of the report would not be in the public interest. The findings of the court deal exclusively with purely technical considerations affecting the immediate and underlying cause of the accident." Four official copies of the report were made, two for the Canadian Government, one for the Newfoundland Government and the fourth to Canadian Pacific Railways. Researchers from England to Toronto have searched for the past 60 years but have been unable to find a copy of the military report. The Case of Mechanical Failure Innocuous bits and pieces of the military report were released stating that the port engine failed due to mechanical failure while the starboard quit due to carburetor icing.

There was one report of grass and rocks and a piece of cloth an inch wide inside the cylinder. The Globe and Mail on March 23, 1941 reported that sand and grass was placed in the oil supply.

Dr. Patrick McTaggart-Cowan the renown chief meteorologist stationed at Gander had a theory about the oil coolers. He said that new square oil coolers were being put into the Hudsons, replacing the older, rounder ones. According to McTaggart-Cowan the new coolers were too weak for cold weather starts and were rupturing. Bob Banting, grand-nephew of the great scientist, is the manager of information technology security at Atomic Energy of Canada. He has spent years accumulating data about the crash. He calls the oil-cooler theory "utter nonsense". Banting's research found that Lockheed never changed its round coolers to round ones. He did discover that engineers replaced the air induction units that sucked air into the engines. He thinks Mc-Taggart got the two confused.

Bob Banting also takes issue with the mechanical failure cited by the military. In short he has demolished the reasoning the military gave for the port engine failure. Banting also disagrees with the military theory that the starboard engine failed due to carburetor icing.

The Hudson could not get across the North Atlantic unless an extra fuel tank was installed in the cabin. All of the fuel flowed to the engines through a single pipe, there was no alternative route. If that small pipe clogged, it was game over. Someone intent on

## Notes on "Civil Aviation"

having the aircraft come down over the Atlantic could introduce sufficient dirt into the fuel tank to eventually clog the fuel filter. Military documents in the National Archives of Canada indicate that one method used by saboteurs was to put sugar into the fuel tanks. Eventually it would mix with the fuel, get into the engines and seize the cylinders. Bob Banting thinks the Hudson was a victim of sabotage. He thinks the most likely method used, and one used quite often by saboteurs, was placing sand in the oil. The sand would jam the oil cooler, inhibiting oil intake to the engines.

### CONCLUSION

It was a tragic, costly and unnecessary loss. It makes one question why Dr. Banting's trip was not kept secret. The lack of security is surely reprehensible and not at all indicative of what should have been done. The military would be most irresponsible to release a report that would indicate a lack of security during the war. However, 55 years after the war is over would seem to be a fairly safe time to "find" the military report.<sup>236</sup> In 1999 Canadian scientists named Sir Frederick Banting as the greatest scientist of the twentieth century.

1941 : Allied Air Transport Command conceived.

1941 : UK A.I.D "Common Services" division created to deal with administrative matters and supervision of female personnel. A consultant on Radiological Inspection (CRI) is appointed. The outbreak of the war saw Director A.I.D with director's status. October 1941 - upgraded to Deputy Director General. June 1943 upgraded to Director General, with coincident re-grading of other senior staff.

02 April 1941 : Shenstone "one of the leading airplane designers of the British Empire" - Globe and Mail, Toronto.

12 April 1941 : Shenstone credited with "smoothing out problems" concerning adding heavier armament to US aircraft destined for delivery in Britain, and responsible for the highly successful aerodynamic performance of England's Spitfire fighter - Toronto Times. RJM - "the genius to visualise, without the precise knowledge what had to be done, to reach out for something nearer to perfection"

23 April 1941 : PRODUCTION AND ACQUISITION OF AIRCRAFT <sup>237</sup>.

July 1941: Women's Division of the Royal Canadian Air Force organised.

02 July 1941 : WORKERS (DISCHARGE) <sup>238</sup> .

Mr. Mander asked the Minister of Aircraft Production why hundreds of employ  s are being discharged from aircraft factories at a time when aircraft are most urgently required?

Lieut.-Colonel Moore-Brabazon While the total number of persons in, and the output of, the aircraft industry continues to increase, it is true that, as a result of developing methods of production and the introduction of women labour, there are, in some aircraft factories, men who are, or who will become, available for alternative employment. Actual discharges are made only with the permission of a national service officer under the Essential Work Order. It will be appreciated that changes in the article under construction in order to meet modern operational requirements are necessary, particularly with aircraft, and that when this occurs a period involving the release of some labour is inevitable.

Mr. Mander Is not my right hon. and gallant Friend aware that there is considerable dissatisfaction in aircraft factories at the apparent lack of co-ordination and because the workers object to being paid for doing nothing? Will the Minister alter those conditions or make it clear to the workers why they are being paid for doing nothing?

Lieut.-Colonel Moore-Brabazon I am making arrangements for explanations to be given to the men, but it is sometimes a little difficult to do so. If we were able to go on with a perfectly plain programme, all would be well, but sometimes machines are stopped because they are not operationally required

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<sup>236</sup> Banting's Mysterious Death - As published in the Gander Beacon and written by Frank Tibbo [http://www.ganderairporthistoricalsociety.org/html\\_war/Banting.death.pt3.htm](http://www.ganderairporthistoricalsociety.org/html_war/Banting.death.pt3.htm)

<sup>237</sup> [http://hansard.millbanksystems.com/lords/1941/apr/23/production-and-acquisition-of-aircraft#S5LV0119Po\\_19410423\\_HOL\\_48](http://hansard.millbanksystems.com/lords/1941/apr/23/production-and-acquisition-of-aircraft#S5LV0119Po_19410423_HOL_48)

<sup>238</sup> <http://hansard.millbanksystems.com/commons/1941/jul/02/workers-discharge>

## Notes on "Civil Aviation"

02 July 1941 : AIR TRANSPORT AUXILIARY SERVICE <sup>239</sup> LORD SEMPILL : I have been privileged on several occasions to submit for your Lordships' consideration suggestions appertaining to the aircraft industry and the use of the products thereof, whether for purposes of defence or of commerce. [...] the Motion which stands in my name regarding the supply of air material from that very great nation, the United States of America, that is marshalling and dispatching to us with all rapidity so much of the resources of which she is possessed [...] The importance of air power is becoming greater, as has so often been emphasized in your Lordships' House; and, as one who is justly proud of again serving in the Naval Air Service, I need not emphasize to your Lordships the vital need for us to obtain more aircraft for the Battle of the Atlantic, the Mediterranean struggle and elsewhere. These requirements, of course, are small by comparison with those of that magnificent Service created by the noble Viscount, Lord Trenchard, the Royal Air Force, the deeds of which will decorate the pages of history for all time [...]

Mr. Garro Jones asked the Minister of Aircraft Production whether he contemplates any changes in the relationship of the Air Ministry to the Air Transport Service?

Lieut.-Colonel Moore-Brabazon : I presume my hon. Friend refers to the "Air Transport - Auxiliary Service". If this is so. the answer is "No."

Mr. Garro Jones : Why was it necessary for this service to be performed by civilian workers? Is the **Air Auxiliary Transport Service** really our old friend **British Overseas Airways**, and would it not be better to say so?

Lieut.-Colonel Moore-Brabazon : It is quite a different organisation. It comprises pilots who are operationally unfit. It is a great relief to the Royal Air Force that we can employ pilots on this work who cannot be employed by the R.A.F.

Mr. Garro Jones : Is it not a fact that the people who employ these pilots in the Air Transport Auxiliary Service do so at a very large profit over what they pay to the Air Ministry?

Lieut.-Colonel Moore-Brabazon : The "service" is under me and not under the Air Ministry. I am responsible for delivery of machines to the Royal Air Force.

Mr. Garro Jones : Seeing that I have failed to receive any enlightenment upon this question from the various Ministers concerned, I beg to give notice that I shall take a convenient opportunity of raising the matter on the Adjournment.

Mr. Garro Jones then asked the Secretary of State for Air by what amount the pay of a pilot, who flies aircraft on active service, falls short of the pay of the Auxiliary Transport Service ferry pilot who delivers the aircraft from factory to aerodrome?

Sir A. Sinclair : As the answer is long and contains detailed figures, I will, with the hon. Member's permission, circulate it in the OFFICIAL REPORT.

Mr. Garro Jones : Is it not a fact that pilots who fly aircraft from the factories to the stations get almost twice the amount received by pilots who fly the aircraft on operational duties?

Sir A. Sinclair : Rather than ask me to make a calculation by mental arithmetic perhaps my hon. Friend would wait until he sees the statement.

Official Statement of Secretary of State for Air re amounts of the pay for a pilot who flies aircraft on "active service" (RAF) receives – 1941												
<a href="http://hansard.millbanksystems.com/commons/1941/jul/02/pilots-pay">http://hansard.millbanksystems.com/commons/1941/jul/02/pilots-pay</a>												
Status	Married						Single					
Range	Minimum			Minimum			Minimum			Maximum		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
*Sergeant	-	-	-									

<sup>239</sup> <http://hansard.millbanksystems.com/commons/1941/jul/02/air-transport-auxiliary-service>

## Notes on "Civil Aviation"

*Flight Sergeant	-	-	-										
*Warrant Officer	-	-	-										
Pilot Officer	*U30	-											
	O30	-	-										
Flying Officer	*U30	-											
	O30	-	-										
Flight Lieutenant	*U30	-											
	O30	-	679	18	9	745	6	8					
Squadron Leader	-	-	-										
Wing Commander	-	-	-										
Note: * = Receive additional allowances for children.													

Sir A. Sinclair : As regards members of the Air Transport Auxiliary, I am informed by the Minister of Aircraft Production (Beaverbrook) that pilots are remunerated <sup>240</sup> as follows:

Air Transport Auxiliary - Pilot Renumeration		
Pilots enlisted in the United Kingdom		When "Recruited in America" (Does this include Canada?) .
Rank	£ Per annum.	<p>These pilots receive an "all-in" rate of \$150 a week, which is equivalent to £1,937 17s. 9d. per year,</p>
Senior Captain	1010	
Captain	890	
Junior Captain	770	
1st Officer (Class B)	710	
1st Officer (Class C)	650	
2nd Officer	585	
Probationary Cadet	375	

<sup>240</sup> <http://hansard.millbanksystems.com/commons/1941/jul/02/pilots-pay>



## Notes on "Civil Aviation"

NOTE: - These rates include a consolidated subsistence allowance	NOTE: - The pilots recruited in America are free from having to pay United Kingdom Income Tax.
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22 April 1941 : Ernest L. Janney dies in Winnipeg

24 April 1941 : Ernest L. Janney buried in Brookside Cemetery. When a stone was installed, it read, "Sub-Lieutenant Ernest L. Janney, RCNVR, 1893-1941—Lest We Forget." - See more at: <https://legionmagazine.com/en/2004/07/a-high-flyer-indeed/#sthash.TvoKVHoh.dpuf>

1940 : Pilot candidates in the BCATP were sent to initial flying training schools, while those men who demonstrated a high level of mechanical aptitude were sent to St. Thomas, Ontario, to learn aircraft body design, engine maintenance, or instrument repairs - Peter C. Conrad, Training for Victory The British Commonwealth Air Training Plan in the West. Saskatoon: Western Producer Prairie Books, 1989

June 1940 : Canada : C.P. Edwards, Chief of Air Services, who wrote to Brintnell that the Board of Transport Commissioners was investigating duplication of services in civil flying. "[In] this connection we cannot too strongly urge upon you the necessity for co-operation with other operators and taking such steps as are possible within your own organization to cut your requirements to the bone.,"

Britnell replied: *In regard to our list of mechanical personnel, I would like to point out that we have an overhaul and repair organization called "Aircraft Repair", where we now employ forty-seven men.*

*These are all skilled and trained personnel, and this organization is going to be used on overhaul work for the Air Force, in connection with the air training program.*

*We have been advised by the Department of Munitions and Supply that these men will not be disturbed for any purpose whatsoever, and furthermore, if they do join any branch of the Service, they will be taken back for this work.*

13 August 1941 : Appointment of a National Transport Controller announced

Munitions Minister C.D. Howe announces the appointment of W.J. Lynch of Quebec as transport controller, with "widespread powers over all forms of transportation throughout Canada" from Ottawa

Under the Order In Council authorizing his appointment, Mr. Lynch has:

1. Complete control over use of transportation companies, with
2. Complete control over operation of transportation companies
3. The power to establish schedules, and
4. The power to establish fares to be charged by transport companies.
5. has the authority to issue, reissue, or cancel permits or licenses, and to prohibit, restrict, limit, or extend the working of vehicles.
6. has power to stagger working hours to relieve transportation congestion,
7. may order any employer to arrange or alter hours of employment of employees in order to assure that such proportions as the controller may fix will, as far as possible, arrive at, or depart from, their place of employment at such times as may be directed."

[Toronto Globe and Mail, 14 August 1941]

November, 1940 : The first air crew graduates of the B.C.A.T.P. began arriving in the United Kingdom

"I am convinced that the material we have today is fully worthy of the example handed down by the pilots and crews who so decisively won the Battle of Britain last September."

CAPTAIN H. H. BALFOUR, M.P.,

Under-Secretary of State for Air" After inspecting an R.A.F. Initial Training Wing on February 15th, 1941.

BECAUSE no man can take his place in the Royal Air Force, whether he is destined for service in the air or on the ground, until he has become thoroughly proficient, it might be appropriate to discuss the work of the training commands before dealing with the operational and other branches. The excellent way in which that training is carried out is shown by the high standard of fighter and bomber pilots, by the resource and skill of the crews of

our giant machines, and by the efficiency with which British aircraft have been kept airworthy under the difficult and dangerous conditions of wartime.

Until recently there was only one Training Command in the R.A.F. but when the force began to expand at such an extraordinary rate it became obvious that there must be separate organizations to deal with flying and ground work. Flying Training Command and Technical Training Command are now certainly among the largest in the whole wide range, and it is necessary that they should be, for an air force must work with one eye towards future requirements.

Flying Training Command is divided into six groups.

One group looks after the initial training wings; two are responsible for elementary flying training schools and air observer-navigation schools; two control the Service flying training schools; and the sixth maintains the bombing and gunnery schools. A pilot's tuition is really divided into four stages, though they are continuous. Whether he is a volunteer or a man called up under an age group any entrant attending the recruiting centre may express a preference for air crew duties. Subject to a satisfactory preliminary medical examination his papers are then marked provisionally for flying duties. The next stage is attendance before the Aviation Candidates Selection Board, who test him in mathematics and other subjects of importance to an airman and satisfy themselves that he is up to the required educational standards. He then has to pass the medical examination proper and the physical standards required are high before he is told to report at a receiving wing.

The young recruit is now ready to start his training. After receiving his uniform and kit he is taught how to salute, given lectures on Service discipline and etiquette, learns how to distinguish ranks, and, in short, is generally fitted for a career in the flying Service. After about a fortnight the recruit is transferred to one of the schools of an initial training wing, where elementary instruction is given in mathematics, navigation, aircraft recognition, armaments and signals. At the same time he is drilled and sent on marches and runs, so that his physical and mental education progress side by side.

Candidates for flying duties are sometimes rejected on the ground that they do not reach the prescribed educational standards. Often they are hurt, and their friends are indignant. Does the R.A.F. want men or doesn't it? And what has education got to do with flying? Those are the sort of questions one hears occasionally. There are, however, very good reasons for laying down minimum educational qualifications for men who are to fly.

Pilots, for example, must write reports of their part in operations and they must be clear and free from ambiguity, for those reports are studied carefully, experience gained in actual operations sometimes determining changes in tactics or resulting in improvements in the aircraft employed. An airman cannot afford to be weak in mathematics, for navigation is essentially a mathematical subject. New instruments have been devised which make some of the processes automatic and cut out lengthy calculations, but even with such simplification one principle always holds good that the navigator who

readily understands what he is doing, and Wriy, is better in an emergency than one who does everything by rule of thumb. And emergencies are bound to occur sometimes on active service.

Bomb aiming is another task for which a basic training in mathematics is invaluable. A bomb sight is a complicated instrument, requiring various adjustments to allow for the type of bomb being used, for height and speed of the aircraft, and for wind direction and drift. There are two kinds of bomb-aimers those who know exactly what they are doing and those who have merely learned a lot of meaningless rules. The first type of man sets his sight intelligently, because he realizes the factors for which he is making allowances, while the second type merely loosens a screw, rotates a dial and tightens another screw because he is told that he must do so, trusting to providence that all this weird magic will work. In an emergency there is no doubt which man would be the more likely to hit his target.

It is for all those reasons that the R.A.F. set out to discover, while he is at the first stage, whether a man has sufficient knowledge of the vital subjects to enable him to become a successful pilot, navigator, bomb-aimer or wireless operator-air gunner. There is a mid-course examination in mathematics, in which 60 per cent of marks must be obtained to qualify for completion of the course.

Throughout the long weeks at the I.T.W. he has not been in the air once and has probably not even seen an aeroplane at close range. Nevertheless he has had the sound grounding which will enable him to benefit by the slightly more advanced instruction he will receive at the next stage the elementary flying training school. This is the really vital stage of his training. Though pupils are sometimes rejected even later, it is usually here that a man shows whether he is likely to make a good pilot or not.

If an intending pilot fails at any stage of his training he may be re-mustered for air crew duties or he may be given ground employment.

This gives some idea though by no means a complete picture of how the R.A.F. trains its recruits for the air.

The whole range of ground and air training is controlled by an Air Member, Air Vice-Marshal Garrod. Under him, are Air Commodore A. J. Capel, D.S.O., D.F.C., who is Director of Operational Training; Air Commodore A. H. Orlebar, A.F.C., Director of Flying Training; and Group Captain M. Thomas, Director of Technical Training. Air Commodore Orlebar will be remembered for the prominent part played in Britain's success in the Schneider Trophy races. After the 1929 contest he set up the world's speed record of 357.7 m.p.h. in a Supermarine Rolls-Royce S.6.

Technical training is even more complex than that for flying duties, for it embraces so many subjects. Many thousands of young men are constantly going through the Command's hands, and when they have concluded the course they are skilled or semi-skilled craftsmen.

Technical Training Command is sub-divided into three groups. Two are responsible for general training, and

the other is confined entirely to the allied subjects connected with signals, such as all forms of ground wireless, teleprinters and telephones. Throughout the country there are a number of schools, which are rather more like vast camps, covering many acres of ground.

Men embarking on a technical training go straight from civilian life to the receiving wing of a recruiting centre, where a Trade Selection Board decides for which calling his qualifications make each man best suited. For a week or so his life is very much like that of the new recruit for flying duties, for he is supplied with uniform and kit, does a great deal of drill, learns Service discipline, and so on, and at the end of this time he is drafted to a school to learn his appointed trade. The duration of the course depends on the trade. When this has been completed the most successful pupils go for a short period to a squadron and then come back to a training centre to qualify for a more responsible post.

The vast majority of young men are trained as flight riggers and flight mechanics. These are the engine and airframe fitters. But in addition there is an almost bewildering variety of trades, such as lorry driver, motor transport mechanic, fitter driver (who can overhaul vehicles), fitter-armourer (for both bombs and guns), motor-cyclist, motor mechanic, machine-tool setter and operator (including turners, grinders and millers), blacksmith, acetylene welder, coppersmith, sheet-metal worker, instrument repairer, fabric worker, parachute packer, aero-carpenter, batman, mess waiter, cook and butcher, photographer (developers, printers, enlargers and processors), police, fire-fighter and physical training instructor.

This is not a comprehensive list, but it is enough to show the vast variety of jobs for which men must be trained if an air force is to operate successfully.

In civil life many of the physical training instructors are professional boxers, cricketers and footballers. At one time one R.A.F. training establishment had under instruction a football "team" whose combined transfer fees amounted to 150,000. The same station could put into the field a cricket eleven composed almost entirely of men who have played for England. There were also several boxers of international repute.

The training establishments are all well fitted up, possessing a cinema, concert hall, gymnasium and swimming bath. Though they work hard the pupils enjoy their life here, for there are first-class facilities for sport and recreation, the food is good, and there is enjoyable companionship. They are taught intelligently, without any of the bad old "sergeant-major" stuff, and by the time that they have finished the course they have the comforting assurance of having mastered a skilled or semi-skilled trade which, should the war end on the morrow, would be of value to them in civilian life.

In considering the work of an air force one is apt to think only of the achievements in the air, forgetting that for every member of a flying crew there must be between thirty and forty men on the ground. Without their ground crews bomber squadrons and fighter squadrons, too, would be lost and would have to cease operations after a very short time. Every time that a bomber completes a

successful raid it is, indirectly, a tribute to the efficiency of the maintenance staffs the men whose unexciting task it is to keep the machines airworthy. Upon the standard of their work depends the safety not only of the valuable aircraft but of the crews of five or more; it is a great responsibility.

The maintenance men take a great pride in their work and a personal interest in the particular aeroplane for which they are responsible. They will even speak of it as "my Wellington" or "my Whitley," and if it has done well on a raid they will glow with pride and be as pleased as if they had taken part in the raid themselves. The pilots and flying crews trust these men implicitly, for they know from experience that it would be regarded as base treachery to give what is tantamount to a certificate of airworthiness for a machine which was faulty in the smallest respect. Long experience of working together has created between the men on the ground and the men who fly a very real understanding and friendship. The maintenance men are the technical experts, and often their advice is sought about such things as minimum safety margin for fuel loads (enabling a maximum bomb load to be carried) and other knotty problems on which the fliers' lives may well depend.

When a bomber is going on a raid the ground crew stay with it until it takes off and wait to take it over on its return. As soon as it has landed, the fitters, riggers, armourers, electricians and instrument experts go over it thoroughly and get it ready for the next "outing." The speed at which these men work is, almost incredible. After a raid on Germany a bomber returned to its station at 3.30 a.m. It had to undergo one of the thorough inspections made at the end of every 30 hours' flying time and it had to be re-doped that is to say, have all its exterior surfaces sprayed. Six hours later it was ready. Another machine had been fairly badly damaged in a night raid, but at ten o'clock the following morning, when an officer came from group headquarters to examine it, everything had been put right and the bomber-^ Whitley was all set for the next raid.

Whether it has been hit or not, every bombing aircraft has an inspection after thirty flying hours, and each overhaul becomes progressively more severe and extensive up to one hundred and twenty hours, when the process starts all over again.

In wartime the maintenance crews have to work under pretty bad conditions. It is not safe to leave aircraft in hangars, because of enemy attacks, and so they are deployed on the airfield. The ground men, therefore, have to work in the open in all weathers. Each heavy machine needs a team of twelve to keep it in trim. A corporal, two fitters and two riggers do all of what may be called the running repairs. Then there are the armourers, whose task it is to "bomb up" and feed ammunition into the guns.

The filling of the fuel tanks alone is no small task. For every hour in the air a heavy bomber, such as a Wellington or Whitley, requires between 80 and 90 gallons of petrol. It is not uncommon for these giant machines to make flights of eight hours, so that something like 700 gallons of fuel have to be loaded on to each aircraft. Petrol weighs

## Notes on "Civil Aviation"

round about yi lb. a gallon, so that a total weight of over 5,000 lb. has to be shifted before a single bomber can start out on a raid. And on top of that there is oil to be thought of; tons of bombs have to be loaded into the racks; as well as flares, pyrotechnics and a host of other things. This gives some (though an inadequate) idea of what work is entailed in the operation of a heavy bomber squadron. Fully loaded, a typical British heavy bomber aircraft, the Whitley, weighs between 12 and 14 tons. Yet, like all the smaller machines, it has its beginning in thousands of small parts, many of them not so big as the palm of one's hand. There is something truly romantic about seeing these giants take shape. One can walk in at one end of a factory, watch girls stamping out little bits of aluminium alloy; go on to another great hall where the fuselages are being assembled on steel jigs; travel on again and see detachable parts of the wings, tail units and wing spars being prepared; watch men juggling with seemingly endless and inextricable tangles of wires and electrical fittings, women working at fabric coverings, men spraying the airframes and others fitting engines; and finally, after what seems like a route march, emerge on to the testing ground to see a finished bomber being put through its paces.

All those little bits and pieces have somehow been moulded together into a monster which is nearly 70 feet long, has a wing span of 84 feet, can rise to a height of about 5 miles and can carry five men for a distance of about 2,000 miles at a cruising speed of considerably over 200 miles an hour.

It is an experience which is rather apt to take one's breath away and leave one with a sense of unreality.

For some time now Army officers who wished to do so and who passed the medical and educational tests and concluded their flying training, have been accepted as pilots for Army cooperation work.

For some time now Army officers who wished to do so and who passed the medical and educational tests and concluded their flying training, have been accepted as pilots for Army cooperation work. (aero) and fabric workers (balloon), equipment assistants; for administrative duties and for various clerical duties; as teleprinter operators, radio operators and tracers, telephone operators, four kinds of aircraft hands, dental clerk orderlies, and sick-quarter attendants. Women who have been upholsterers, machinists or tailoresses are found to be good at fabric work, while those who have had experience in factories or wireless shops usually make excellent instrument mechanics. Women who want to become wireless-telegraphy slipreader operators must be experienced typists (preferably touch-typists), while general duties clerks must be able to type at a minimum rate of thirty words a minute. Commercial artists are among those employed as tracers, whose job it is to trace in and colour maps. Some women are engaged in tracking enemy aircraft operating over this country, and in this responsible occupation they work in close touch with the Royal Observer Corps. A new school for code and cypher officers of the

## Notes on "Civil Aviation"

W.A.A.F. was opened in 1940. It is in a big country house in one of the royal counties of England, and is the first of its kind in the Service. The school is actually administered by the Technical Training Command of the R.A.F. W.A.A.F. officers take a short course, which is on the lines of that at the Royal Air Force Staff College. When that course has been completed the WAAF officers are posted to an R.A.F. unit, and in addition to their code and cypher duties they are then responsible, in conjunction with the administrative W.A.A.F. officers, for the welfare and recreation of the airwomen attached to the unit. For some trades it is necessary to pass a selection board. Trained women are then posted to R.A.F. stations, but those with little or no previous knowledge of their trade receive a special course of tuition. There is no direct entry for officers, all of whom are promoted from the ranks. The women undertake to serve anywhere, including overseas.

In the middle of January, 1941, the Air Minister announced plans for the new Air Training Corps (opened April 15th 1941). The "scheme" (Programme) was divided into three parts. Units were to be formed at the universities, at public and secondary schools, and locally. At the universities the Air Ministry was arranging a six months' course for youths who wished to serve as pilots or navigators and who were regarded as potential candidates for commissioned rank. While at the universities the young men would join the Varsity air squadrons and would carry out a course of instruction in Service subjects similar to those taken at the initial training wings of the R.A.F. Flying Training Command. At the same time they would pursue a course of study given by the teaching staff of the university in subjects of value from the Service point of view, such as mathematics and mechanics, electricity and magnetism, engineering, meteorology and navigation. All selected candidates were required to take the first of these and one of the other four subjects. Arrangements had been made whereby boys would be full members of the university while taking the course. Selected candidates would be attested for the R.A.F. before going into residence but would be placed on deferred service during this period. All expenses, except such personal ones as for laundry, were to be paid by the Air Ministry, but the young men would not draw Service pay. On completion of the course candidates who secured the university air squadron certificate and who satisfied the Joint Universities Recruiting Board of their diligence and progress in their other studies and who were regarded as being otherwise suitable would go direct to a flying training or observer training school. That is to say, their training at the university, having been similar to that given at the initial training wings of the R.A.F., would be substituted for the first stage of their Service training.

In order to get the "scheme" (Programme) going the Air Minister persuaded Uppingham School to release for a period of six months their brilliant headmaster, Mr J. F. Wolfenden, and he became the Air Ministry's first Director of Pre-Entry Training. The Director is directly responsible to Air Marshal A. G. R. Garrod, the Air Member for Training. Responsibility for the training of all units and for the administration of local units is vested in Air Commodore J. A. Chamier, who was formerly Commandant

## Notes on "Civil Aviation"

of the Air Defence Cadet Corps.

Naturally, the local "scheme" (Programme) forms by far the largest part - There is no corner of the country where a unit has not been formed. It is here that the organization of the Air Defence Cadet Corps has been most useful.

It is here that the organization of the

Air Defence Cadet Corps has been most useful. Where there had been a local cadet squadron the committee readily offered their services; where there had not, a local organization was set up without delay. Arrangements were made with the local authorities for instruction to be given at Air Ministry expense in such essential subjects as mathematics. Smaller schools were encouraged to link up with local units, and many have done so.

An Air Training Corps Council of Welfare was also set up, together with a small board of trustees. For potential air crew candidates the local "schemes" (Programmes) are now providing a syllabus approximating to that of an R.A.F. initial training wing. The principal subjects are mathematics, navigation, signals and the theory of flight. Wherever possible Link trainers are being provided. Special syllabuses have also been prepared for potential entrants for mechanical and signals ground duties. In many cases schoolmasters have volunteered to act as instructors, while hundreds of men with R.A.F. experience have also come forward.

On the day after the "scheme" (Programme) had been announced in the Press offers to form squadrons, to help with this and that, came pouring into the Air Ministry. The department was almost overwhelmed.

When war overtook this country the shortest time for a flight across the Atlantic was 10 hours 33 minutes, set up in September, 1937, by the Imperial Airways flyingboat Cambria during an experimental flight from Botwood, Newfoundland, to Foynes, in Eire. Atterro had not been functioning very long before a British ex-civil air line pilot brought the record down by nearly an hour, while in the spring of 1941 some of the American bombers were getting over in 8½ hours. And, remember, they could not come down at Foynes. One has actually crossed in the almost unbelievably short time of 7½ hours.

Among the American aircraft which have been brought over in this way are the Consolidated P.B.Y. flying-boat, known in this country as the Catalina; the Boeing 6-24 heavy bomber (British name, the Liberator) ; the Lockheed Hudson and Lockheed Vega Ventura; and the Boeing B-29 (the "Flying Fortress").

for any aeroplane with a sufficiently long range has been flown across to England ever since October, 1940. The complete machines are



## Notes on "Civil Aviation"

delivered to Canada from the United States factories, taken on to Newfoundland and then flown direct to reception depots in this country. The success of this enterprising method of delivery has been extraordinary. Up to the time when Lord Beaverbrook made the House of Lords speech already referred to only a single aeroplane, representing a decimal of 1 per cent, of the total, had been lost. The author knows for a fact that that still held good some time later. It may still represent the sole casualty. Yet those machines have been brought across, week after week and month after month, in weather which was often totally unsuitable for cross-ocean flights

"A pilot's tuition is really divided into four stages, though they are continuous. Whether he is a volunteer or a man called up under an age group any entrant attending the recruiting centre may express a preference for air crew duties. Subject to a satisfactory preliminary medical examination his papers are then marked provisionally for flying duties. The next stage is attendance before the Aviation Candidates Selection Board, who test him in mathematics and other subjects of importance to an airman and satisfy themselves that he is up to the required educational standards."

(Source ref: HOW THE R.A.F. WORKS by A. H. NARRACOTT - LONDON FREDERICK MULLER LTD. 29 GREAT JAMES STREET W.C.1 1941 - PRINTED IN GREAT BRITAIN BY UNWIN BROTHERS LTD. THE GRESHAM PRESS WOKING Second Edition, October 1941 )

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31 December 1932 : Licensed Air Engineers in Canada 944 source ref : pg 266 "The Engineering Journal" May 1943

### CANADIAN AVIATION - 1942

1942 : Number of personnel required to keep one RAF Avro Lancaster B Mark I flying :

## Notes on "Civil Aviation"

3x Operations staff:

1x flying control officer,  
1x WAAF parachute packer,  
1x meteorological officer,  
1 Avro Lancaster bomber, 7 aircrew:  
pilot / captain,  
navigator / observer,  
air bomber,  
flight engineer,  
wireless operator/air gunner  
air gunner  
air gunner

12 flight maintenance crew:

Non Commanding Officer - fitter,  
Non Commanding Officer - fitter,  
flight maintenance mechanic,  
flight maintenance mechanic  
flight maintenance mechanic  
flight maintenance mechanic  
flight maintenance mechanic  
electrical mechanic,  
instrument repairer,  
radio mechanic  
radio mechanic:

Bombing up (Loading) team;

Tractor with a bomb train and 4 crew members  
WAAF tractor driver  
bombing-up crewman  
bombing-up crewman  
bombing-up crewman

17 ground servicing crew members:

corporal mechanic,  
aircraft mechanic  
aircraft mechanic  
aircraft mechanic  
aircraft mechanic,  
engineer officer,  
fitter/armourer,  
armourer  
armourer  
armourers  
radio mechanic  
instrument repairer  
instrument repairers,  
bomb handler  
bomb handler  
bomb handler,  
machine gun belt fitter

AEC Matador petrol tender with 2 re-fueling crewmen,  
Mobile workshop with 3 workshop crewmen.

February 1942 : Women's Division of the Royal Canadian Air Force formally integrated.

## Notes on "Civil Aviation"

24 March 1942 : Parliament - Ottawa, Ontario : Right Hon. W. L. MACKENZIE KING (Prime Minister): make a statement concerning measures recently adopted giving additional effect to the government's policy with respect to the mobilization of man-power - cite the various orders including:

1. P.C. 638, March 4, 1942, Essential work (scientific and technical personnel) regulations, 1942.
2. P.C. 26/1840, March 10, 1942, providing for extension and improvement of training in personnel management, for the appointment of a director of personnel training, and for the appointment of personnel managers.

[...] An important phase of the man-power **problem has to do with providing** in war industries **the necessary supervisory personnel**. It has been found that, as war industries continue to expand, **it is increasingly difficult to secure sufficient supervisors, personnel managers, and foremen, to direct the enlarged work forces**. Many plants producing urgently needed war materials are now operating day and night, seven days in the week. Others that might be operating on the same basis are **hampered by lack of supervisors**. A recent statement by Mr. Bevin on **the importance of personnel factors in war production in Great Britain is equally applicable to Canada**. It reads: *In the layout of our war effort, sufficient attention was not paid to the personnel problem. . . . The longer the war goes on, the more necessary it becomes to pay greater regard to this personnel side of industry. The absence of a proper understanding of the problem has been one of our greatest handicaps in this great struggle. . . . Hence my additional plea for the personnel manager, who should be specially trained to have an equal position in industry with others members of the executive. Indeed, I am sure and I would emphasize this: that our post-war position will be materially helped. Mobilization of Man-Power and the future prospects of British industry enhanced, by a full appreciation of this important fact. To assist our Canadian employers to meet their personnel problem, provision has been made by the government for training in personnel management. The universities have agreed to cooperate. Experienced personnel men will serve as instructors and sponsors. Trainees will be given practical instruction in the classroom, and on the job. If the experience of this undertaking warrants, these facilities will be extended to foremen and other supervisors. It is hoped by this means greatly to reduce an important area of difficulty in war production. Moreover, better personnel policies and practice should minimize friction between management and men, improve morale, and thereby increase output...* [...] Another step in the allocation of man-power recently taken, relates **to the diversion of technicians to war service**.

It concerns persons normally engaged **in the engineering profession** as civil, mechanical, electrical, chemical, metallurgical or mining engineers; **also production** and industrial engineers, college teachers of engineering science, persons trained in any branch of the science of chemistry, research scientists and persons other than teachers holding university degrees in engineering, chemistry, physics, geology, mathematics, architecture, or in any natural science; also all technically qualified members of the Engineering Institute of Canada, the Canadian Institute of Chemistry, the Canadian Institute of Mining and Metallurgy, the Royal Architectural Institute of Canada and of any provincial association of professional engineers, chemists or architects.

About a year ago, **with the aid of the professional engineering societies, there was established in the Department of Labour a war-time bureau of technical personnel**.

The bureau has accumulated information **on most of the professional engineers of the country**.

It has sought to make engineers available as needed in the armed services and in war industry.

**The time has come, when in the opinion of the government, all technical men should be shifted** from non-essential activities to war or other essential services.

Under regulations at present in force, if, at the request of the Minister of Labour an engineer is willing to transfer to more essential work, his present employer is obliged to release him and to reinstate him when his undertaking on essential work is completed.

**Employers who hire or release technical employees are required to** notify the bureau so that technical men as needed in the war effort may be quickly located.

**Contracts of employment for the services of technicians require the approval of the Minister of Labour.**

This measure is restricted for the present to professional technicians. It may, however, become necessary as an essential war service, also to require skilled workmen in certain categories, to remain in their existing occupations in war industries, or to move from one war industry to another, or to remain in certain essential civilian occupations.

Should such widespread control become necessary, every effort will be made to reduce its arbitrary aspects to a minimum, and to secure, from workmen and employers alike, the largest measure of voluntary cooperation.

In order to increase the numbers of men available for service in the armed forces, in war industry, or in other essential occupations, regulations have been made which prohibit the entry into employment in a wide variety of occupations, of men who are of military age and physically fit. These occupations will be known in future as restricted occupations.

25 June 1942 : Ottawa : Orders in Council : Aircraft Control Regulations — office of deputy Aircraft Controller established - ORDER IN COUNCIL # 5387

August 1942 : RCAF bomber squadrons began to redeploy to RAF stations in Yorkshire, in preparation for

## Notes on "Civil Aviation"

coming under the command of the still unformed Canadian No. 6 Group.

August 1942 : RCAF bomber squadrons become responsible for their own administration and aircraft maintenance.

12 to 17 August 1942 : Moscow Conference, Kremlin, Russia. Churchill meets Stalin and Molotov at the Second Moscow Conference between the major Allies. Churchill wrote "mission was like 'carrying a large lump of ice to the North Pole'<sup>241</sup>"<sup>242</sup>

October 1942 : C.D Howe and Ralph Bell (Dir. Gen.Aircraft production branch - Dept. of Munitions & Supply: Fed. Dept. charged with all defence production) visit England and are briefed on developments in Jet Engine Technology.

01 July 1942 : Canadian Pacific Railways, which briefly had been included in a proposal to create the national airline, decided to create its own air service. Canadian Pacific Air Lines started operations.

31 December 1936 : Licensed Air Engineers in Canada ??? source ref :

31 December 1937 : Licensed Air Engineers in Canada 595 source ref : pg 266 "The Engineering Journal" May 1943

31 December 1938 : Licensed Air Engineers in Canada 643 source ref : pg 266 "The Engineering Journal" May 1943

31 December 1939 : Licensed Air Engineers in Canada 722 source ref : pg 266 "The Engineering Journal" May 1943

31 December 1940 : Licensed Air Engineers in Canada 822 source ref : pg 266 "The Engineering Journal" May 1943

31 December 1941 : Licensed Air Engineers in Canada 832 source ref : pg 266 "The Engineering Journal" May 1943

31 December 1932 : Licensed Air Engineers in Canada 944 source ref : pg 266 "The Engineering Journal" May 1943

### CANADIAN AVIATION - 1943

Early 1943 Air Council of the opinion that "A sound aircraft Industry capable of producing its own designs was an absolute essential foundation of the future of Canadian air power"

01 April 1943 : Aviation Week reporting : House of Lords Debates - London UK, Development Of British Postwar Civil Aviation : The Future of British civil aviation has been very much In the public eye lately, but a recent discussion in the House be done at present to improve the prospects.

Critics of the British government are by no means. Lord Londonderry, himself a former Secretary for Air, was in favor of transferring civil aviation from the Air Ministry to a separate Ministry of Air Transport or, possibly, a reconstructed Ministry of Transport, thus subjecting aviation to the same control as land and sea traffic.

Lord Mottistone also favored Air Transport and Research, Viscount Bennett, the former Canadian Prime Minister, finding the fault in another place, demanded the reorganization without delay of the British Overseas Airways Corp.

He declared its directors should have no interest in other enterprise, there should be a managing director, the best executive organization money can buy, and regional managers, accountable to their managing director, for North and South Atlantic routes. The Duke of Sunderland proposed the establishment of an Air Trans. Command in the RAF. and Lord Brabazon made a similar suggestion by recommending formation of an Air Transport Corps in the RAF.

All speakers thus seemed to find fault with the present organization of British civil aviation and the government was charged with lack of policy. given by Lord Sherwood. Joint Under Secretary of Air. who emphasized that the government was giving earnest study to the problems of civil aviation and to the types of craft which would be required after the war. Close attention modification of bomber types for transport, he pointed out. Until new types of transport aircraft could be produced.

January 1943 : THE LABOUR GAZETTE : Wartime Controls Found Valid : Supreme Court of Canada Upholds Validity of Order in Council Delegating Power to Controller and of Order Issued by Controller under this Authority

<sup>241</sup> Winston S. Churchill, The Second World War, Volume IV: The Hinge of Fate, Penguin Classics, 2005, p. 428

<sup>242</sup> [http://ww2history.com/key\\_moments/Eastern/Churchill\\_meets\\_Stalin\\_in\\_Moscow](http://ww2history.com/key_moments/Eastern/Churchill_meets_Stalin_in_Moscow)

## Notes on "Civil Aviation"

*The authority of the Governor in Council to delegate to subordinate agencies the powers conferred on him by the War Measures Act was upheld in a unanimous decision rendered on January 5 by the Supreme Court of Canada.* The judgment has removed doubts as to the validity of the Government's system of wartime controls, a system which has been in operation since the beginning of the war and has been steadily extended in scope until it is now of basic importance to the entire war program.

It was first challenged when a charge of an offence against an order made by the Oil Controller was dismissed by the senior County Court Judge in the County of York on the ground that the authority vested in the Governor in Council could not validly be delegated to a Controller. A few days later, another charge, this time involving an infraction of the National Selective Service Regulations, was dismissed by a Kingston magistrate, and in other cases judgment was withheld.

As a result, doubt was cast on the validity of a wide range of regulations under the War Measures Act, including the Defence of Canada, price control, wages stabilization, foreign exchange control and manpower regulations and the orders issued under them.

A Reference was therefore made to the Supreme Court to determine:-

- (1) if an Order in Council relating to chemicals, which was considered to be representative, was ultra vires of the Governor in Council, and
- (2) if an order issued under that Order in Council was ultra vires of the Chemicals Controller who had issued it. The unanimous opinion of the Court was that neither the Order in Council nor the order were invalid except for one paragraph of the Order in Council which was held to be clearly in conflict with a section of the War Measures Act.

\*In the matter of a Reference as to the validity of the Regulations in relation to Chemicals enacted by the Governor General of Canada on the 10th day of July, 1941, P.C. 4996, and an Order of the Controller of Chemicals, dated the 16th day of January, 1942, made pursuant thereto.

### Act Itself Not Open to Challenge

It was pointed out that there could be no dispute as to the validity of the War Measures Act itself, this matter having been finally determined by the Privy Council in *Fort Frances Pulp and Paper Company v. Manitoba Free Press Company* (1923) A.C. 695. Moreover, it could not be suggested that the various subjects dealt with by regulation and order, whether by the Governor in Council direct or by subordinate agencies under a delegated authority, were not within the powers vested in the Governor in Council by the Act.

The question to be determined, therefore, related purely to the delegation of power to subordinate agencies, and this involved particularly the interpretation of Sec. 3 of the Act which provides that The Governor in Council may do and authorize such acts and things, and make from time to time such orders and regulations, as he may by reason of the existence of real or apprehended war, invasion or insurrection deem necessary or advisable for the security, defence, peace, order and welfare of Canada. . . and that All orders and regulations made under this section shall have the force of law. . .

### Legislative Powers Conferred on Governor in Council

*Chief Justice Duff expressed the opinion of the Court* when he stated that the decision in *re Gray* (1918) 57 Can. S.C.R. 150 involved the principle, which must be taken by this Court to be settled, *that an Order in Council in conformity with the conditions prescribed by, and the provisions of, the War Measures Act may have the effect of an Act of Parliament.*

That is, *the Act confers law-making authority on the Governor in Council, and within the ambit of the Act he has powers as great as those of Parliament itself.* Apart from conditions expressed in other sections of the Act, the validity of an order passed under Sec. 3 depends on a two-fold condition:

1. that it could be enacted as a statute by Parliament, in execution of its emergency powers, or otherwise; and furthermore,
2. *that Parliament is not precluded by the British North America Act, or by any later enactment concerning its legislative powers, from committing the subject matter of it to the Executive Government for legislative action.*

At the same time, the risk of an abuse of power is avoided because Parliament still remains the ultimate authority:

Under the War Measures Act the final responsibility for the Acts of the Executive rests upon Parliament. Parliament abandons none of its powers, none of its control over the Executive, legal or constitutional.

## Notes on "Civil Aviation"

Sec. 3 of the Act is couched in *extremely comprehensive terms* : "the Governor in Council has power to do any act or pass any order which he deems necessary for the security, defence, peace, order and welfare of Canada." *These words, on their natural meaning, cannot be interpreted as precluding delegation of authority.*

*In Britain in the last war wide powers were delegated to Boards and Controllers under authority of a statute whose language was less comprehensive than that of the War Measures Act, and in the Defence of the Realm Act of 1939 the necessity of this procedure was recognized by the fact that it was explicitly provided for.*

*Actually, the imposition on the Governor in Council of the duty of safeguarding the supreme interests of the State in itself necessarily implies that he has the power to delegate his authority, for otherwise he would be unable to perform his duty adequately.*

I find it impossible to suppose that the authors of the enactment did not envisage the likelihood of the Executive finding itself obliged .... to make use of such [subordinate] agencies.

The Governor in Council has been vested with full discretion in performing the duty imposed on him and he alone is competent to decide what it is necessary to do. Subject to the conditions expressed above it is not within the powers of any court to canvass the considerations which led him to believe that any regulations he might pass are necessary or advisable.

The words are too plain for dispute: *the measures authorized are such as the Governor in Council (not the courts) deems necessary or advisable.*

### Governor in Council not a Delegate

Mr. Justice Rinfret amplified this reasoning in certain particulars.

Citing the case of *Hodge v. the Queen* (1883) 9 App. Cas. 117, he stated that the powers conferred on the Governor in Council are "not in any sense to be exercised by delegation from or as agents of the Parliament."

Within the limits prescribed, the authority of the Governor in Council is as plenary and as ample as the Parliament "in the plenitude of its powers possessed and could bestow." The "devolution effected by the War Measures Act" (to borrow the expression of my Lord the Chief Justice in the *Gray* case) is not to be assimilated to a so-called delegation; and such a devolution has no analogy with agency;

The maxim "Delegatus non potest delegare" therefore does not apply as having no reference to legislative authority.

The Governor in Council within the ambit of the Act, is not a delegate.

The Act constitutes a devolution of the legislative power of Parliament, and, within prescribed limits, it can legislate as Parliament itself could.

Therefore it can delegate its powers whether legislative or administrative.

June 1943 : Transportation and Public Utilities: Air Transportation :-

Canadian Pacific Air Lines Ltd. and its Employees Engaged on Air Transportation, Field Maintenance and Shop Employees Engaged in the Maintenance of Aircraft, Aero Engines and such other Equipment as may be used in Air Transportation, as Represented by a Duly Accredited Committee of the Said Employees.

Hours: For field maintenance employees, 8 hours to be specified if possible; if required to work more than 48 hours per week, compensatory time off to be allowed. For shop employees, the normal working day to be 8 hours; for work in excess of 48 hours in a week, compensatory time off to be allowed.

Vacation: after one year's service, monthly rated employees to have two weeks' vacation with pay.

1943 : Canadian Pacific Air Lines Ltd monthly wage rates for certain classes:

1. Inspector \$175,
2. Licensed Air engineer, Senior grade) \$175,
3. Licensed Air engineers \$115 during first year to \$155 during fifth year and after;
4. Apprentice Air Engineer \$60 to \$150
5. Journeyman Air Mechanic \$165,
6. Junior Air Mechanic \$105 to \$125,
7. Apprentice Air Mechanic \$60 to \$150

## Notes on "Civil Aviation"

8. Dopers, upholsterers, fabric workers \$110 and \$130,
9. Mechanic's helpers \$60 to \$100,
10. Cleaner and labourer \$75,
11. Storekeepers \$100 to \$125,
12. Shipper and receiver \$110 and \$115,
13. Stores issuer \$60 to \$90,
14. Stores truck driver \$85 to \$100.

NOTE: Apprentices, if accepted, are to serve five years apprenticeship. After which they will (if passing their tests) be classified as Journeymen mechanics or Air engineers in their respective classifications. Provisions are also made for seniority rights and for the settlement of grievances.

COLLECTIVE AGREEMENTS AND WAGE SCHEDULES : Air Lines in Canada, is in effect from June 1, 1942, to May 31, 1943, and thereafter subject to notice. This is an amended agreement, the original having been summarized in the Labour Gazette, June, 1941, p. 701. Sub-foreman, tool and die makers, helpers, chauffeurs and janitors are added to the classes of workers covered.

Minimum monthly wage rates, based on a 48 hour week, are:

1. crew chief, air engineer and aircraft inspector, \$175 (no change from previous agreement)
2. sub-foreman, tool and die maker, \$175 (not in previous agreement),
3. detail inspector \$165 (formerly \$175),
4. mechanic \$165 (no change),
5. junior mechanic \$120 to \$150 (no change),
6. learners \$60 to \$110 (no change);
7. helper \$120 (not in previous agreement),
8. chauffeurs \$85 to \$110 (not in previous agreement),
9. janitors \$75 to \$95 (not in previous agreement),
10. cleaner \$75 (no change);
11. stockkeeper \$130 to \$140 (formerly \$120 to \$125),
12. shipper and receiver \$120 to \$130 (formerly \$110 to \$115),
13. assistant stockkeeper \$100 to \$115 (formerly \$100 to \$105),
14. issuer \$60 to \$90 (no change).

Vacation: the date on which employees are classified as having a year's service and eligible for a two weeks' vacation (or less service and eligible for a partial vacation) is March 31, instead of June 30. A Co-operative Committee to be set up to work in conjunction with the management on matters requiring joint consideration.

**An amendment** was made to this agreement from October 1, 1942, **to cover** the employment of **female workers in the maintenance and overhaul department**. Female workers:

1. start at \$55 a month for the first month (or longer if necessary to determine fitness to be learners)
2. if assigned a cleaner, basic rate will then be \$70;
3. if assigned as a learner, basic rate of \$55, with advancement each six months as for male learners except that female learners are paid \$5 less per month than male learners;
4. in the stores department female issuers or assistant stock-keepers are paid the same rates as male employees if capable of performing the same work

1943 : aircraft factory workers refs in the labour gazette:

Belleville, 1129;  
Dartmouth 987;  
Fort Erie, 637;  
Malton, 85;  
Moncton (Lakeburn), 987;  
Moose Jaw, 85,  
Toronto, 987;  
Vancouver, 1699.

Practically all manufacturing plants were working full time. Skilled craftsmen were needed for work on aircraft, and trainees were being sought for aircraft maintenance and assembly work

## Notes on "Civil Aviation"

Trans-Canada Air Lines and Their Employees, Represented by International Association of Machinists, Lodge 714 (Aircraft Maintenance Mechanics, Etc.).

This agreement, which covers aircraft maintenance at all landing fields of the Trans-Canada Air Lines in Canada, is in effect from June 1, 1942, to May 31, 1943, and thereafter subject to notice. This is an amended agreement, the original having been summarized in the Labour Gazette, June, 1941, p. 701. Sub-foreman, tool and die makers, helpers, chauffeurs and janitors are added to the classes of workers covered.

Minimum monthly wage rates, based on a 48 hour week, are: crew chief, air engineer and aircraft inspector, \$175 (no change from previous agreement) sub-foreman, tool and die maker, \$175 (not in previous agreement), detail inspector \$165 (formerly \$175), mechanic \$165 (no change), junior mechanic \$120 to \$150 (no change), learners \$60 to \$110 (no change); helper \$120 (not in previous agreement), chauffeurs \$85 to \$110 (not in previous agreement), janitors \$75 to \$95 (not in previous agreement) cleaner \$75 (no change); stockkeeper \$130 to \$140 (formerly \$120 to \$125), shipper and receiver \$120 to \$130 (formerly \$110 to \$115), assistant stockkeeper \$100 to \$115 (formerly \$100 to \$105), issuer \$60 to \$90 (no change).

Vacation: the date on which employees are classified as having a year's service and eligible for a two weeks' vacation (or less service and eligible for a partial vacation) is March 31, instead of June 30. A Co-operative Committee to be set up to work in conjunction with the management on matters requiring joint consideration.

An amendment was made to this agreement from October 1, 1942, to cover the employment of female workers in the maintenance and overhaul department: female workers to start at \$55 a month for the first month (or longer if necessary to determine fitness to be learners) ; if assigned as a cleaner, basic rate will then be \$70; if assigned as a learner, basic rate of \$55, with advancement each six months as for male learners except that female learners are paid \$5 less per month than male learners; in the stores department female issuers or assistant stock-keepers are paid the same rates as male employees if capable of performing the same work. Source for above : THE

LABOUR GAZETTE - DEPARTMENT OF LABOUR, CANADA VOLUME XLIII FOR THE YEAR 1943 OTTAWA -EDMOND CLOUTIER, PRINTER TO THE KING'S MOST EXCELLENT MAJESTY -1944

1843 : Canadian Department of Labour :

1. Minister of Labour : Hon. Humphrey Mitchell
2. Deputy Minister of Labour : A. Macnamara
3. Associate Deputy Minister : V. C. MacDonald

31 December 1943 : the strength of the Royal Canadian Air Force : 206,350

31 December 1943 : the strength of the Women's Division of the Royal Canadian Air Force :15,153

October 1945 RCAF Maintenance Command formed at Uplands

1943: RCAF traveling trade test board (UK) tests Squadron ground crew personnel : their findings were disappointing. This was true of engine and airframe mechanics. One can imagine that the general state of competence of these specialists could reasonably be extrapolated as to suggest those working at Croft (a satellite airbase situated 5 miles south-west of Middleton St George) were not that different. HR-910 could then have been attended by workmen who's proficiency was below what it should have been. Furthermore, the material conditions and schedules under which these mechanics had to repair aircraft during WWII was less than ideal. They sometimes had to do maintenance and repair work out in the open. In addition, whereas the replacement of a Merlin engine should normally take up to a week, Squadron mechanics would be able to manage with only five hours. Of course, the high expertise they developed «under fire» can explain this rather miraculous result, but could it also guarantee 110% quality under such circumstances? Could they submit every inch of a shaken up airframe to an extensive and scrupulous inspection up to standards we wouldn't do without today? The Halifax was designed modularly, with a set of subassemblies being built individually



## Notes on "Civil Aviation"

and then pieced together in final assembly; the modular construction permitted more rapid construction, straightforward road transport of subassemblies, and relative ease of repair.

01 June 1943: British built Avro 683 Lancaster Mk III Canadian "Civilian" registered to Trans-Canada Airways as CF-CMS takes to the skies, this is the first flight of a 4-engine civil aircraft registered in Canada.

18 October to 3 November 1943 : The 1st Moscow Conference<sup>243</sup> . Representatives of the Governments of the United States of America, the United Kingdom, the Soviet Union, and China meet in London, UK. results in 1) the demand for the unconditional surrender of Axis powers and 2) the proposed the establishment of an international organisation for peace (UN).

Original intention : to progress Anglo-American relations with the USSR. The Americans redirect the thrust of the conference from the issue of "creating a world peace organisation" to the "question of Germany's future".

It was decided that Germany should be completely disarmed and made to pay reparations for the damage inflicted on the Soviet Union and Allied countries. The European Advisory Commission was established to work on the terms of surrender to be proposed to Germany and its Axis satellites after the end of the war.

Also on the agenda was the proposed plan for the (Allied) invasion of (occupied) France.

Britain and America assured the USSR that the invasion would happen the following spring.

This was combined with a declaration against Nazi atrocities in the occupied territories.

Further actions included a protocol on joint Anglo-Soviet action to bring Turkey into the war on the side of the Allies.

The conference also saw the **Four-power or Four-nations Declaration**, otherwise known as "**the Moscow Declaration**", issued on 30 October.

China was invited to join the USA, UK and the USSR in signing this declaration.

**The Moscow Declaration** emphasised the need for the unconditional surrender of Axis powers and reiterated the United Nations Declaration proposing an international organisation for peace.

Clause 4 of **the Moscow Declaration** stated: 'That [the four powers] recognise the necessity of establishing at the earliest practicable date a general international organisation, based on the principle of the sovereign equality of all peace-loving states, and open to membership by all such states, large and small, for the maintenance of international peace and security.'

10 November 1943 : Canadian Air Council deliberates on the prudence of preparing specifications for an experimental aircraft type such as a fighter small bomber to use jet engines currently being developed.

1943 : Brabazon committee selects de Havilland Co. to be committed [i.e they are elected by the air ministry?] to the design and construction of a service / civil jet-engined air-liner.

### CANADIAN AVIATION - 1944

11 February 1944 : Ottawa : **Topic:** Royal Canadian Air Force. **Subtopic:** Transfer of Canadian personnel from RAF to R.C.A.F <sup>244</sup>

James Sinclair Liberal :

"I should like to direct a question to the Minister of National Defence for Air or his parliamentary assistant.

Yesterday the minister informed the house that he is now holding discussions with representatives of the British air ministry on matters affecting the R.A.F. and the R.C.A.F. There is one matter which is of great interest to all Canadian airmen serving overseas, that is, the transfer to the R.C.A.F. of Canadian airmen who enlisted in the R.A.F. either prior to or subsequent to the declaration of war. These men have given heroic service and have added great lustre to Canada's name. I ask the minister or his parliamentary assistant if consideration is being given in these discussions to the transfer of Canadians in the R.A.F. to the R.C.A.F."

<sup>243</sup> <http://www.bbc.co.uk/history/ww2peopleswar/timeline/factfiles/nonflash/a1141921.shtml>

<sup>244</sup> <http://www.lipad.ca/full/1944/02/11/2/>

## Notes on "Civil Aviation"

Cyrus Macmillan (Parliamentary Assistant to the Minister of National Defence for Air) Liberal :

"While it is hoped that the minister will not be pressed for *piecemeal reports of the conference* [since he has undertaken to give a report when it terminates] I can say now that, "the matter has been raised in the house many times, that the question of transfer from the R.A.F. to the R.C.A.F. of Canadian nationals is one of the problems being considered". It has been under negotiation for some time. In August last, concrete and detailed proposals were made to the air ministry and the minister hopes that out of the conferences at present being held there will be a final and mutually satisfactory solution"

13 February 1944 : The "Dominion Wartime labour Relations (P.C. 1003)"

issued under the War Measures Act suspends the **Industrial Disputes Investigation Act, 1907**.<sup>245</sup> The Liberal government passes the emergency "Order-in-Council". Dominion Wartime labour Relations (P.C. 1003) **will have an impact on the Air Engineer in years to come**. the wartime administration of [W.L. Mackenzie King](#) exercising its wartime emergency powers issue Order in [Privy] Council - P.C. 1003, granting Canadian workers collective-bargaining rights that American workers already enjoyed under the Wagner Act.

P.C. 1003 allowed for a greater degree of public intervention in the bargaining process than in the USA.

Investigative and cooling-off provisions in labour disputes were already a cornerstone of Canadian policy (going back to Mackenzie King's Industrial Disputes Investigative Act of 1907), and

wartime conditions demanded a "no-strike provision" (linked to the mandatory inclusion of binding arbitration of grievances in union contracts), which became a permanent feature of Canadian [labour-relations law](#).

During the war, the Canadian mass-production sector was rapidly organized by CIO unions.<sup>246</sup> P.C. 1003, a Federal Cabinet Order, contained a comprehensive framework<sup>247</sup> for recognizing unions, which *informs* Canadian laws to this day.

Influenced by the Wagner Act, the central features of this framework were the following<sup>248</sup>:

1. non-managerial employees (other than excluded categories) were given the right to form and join unions;
2. actions by employers against employees exercising the right to unionize were prohibited;
3. labour boards, not courts, were authorized to certify unions as bargaining representatives for appropriate bargaining units, on proof of majority support;
4. once certified, *a union became the exclusive bargaining representative of all employees in the bargaining unit, whether or not they were union members*;
5. employers had to bargain in good faith;
6. before resorting to economic sanctions, the parties were required to participate in government-sponsored conciliation; and
7. during the term of a collective agreement, the parties could not engage in strikes or lock-outs, but instead were required to submit differences arising under the collective agreement to a neutral third party for grievance arbitration.

Following WWII, each province introduced its own legislation, based on the P.C. 1003 model<sup>249</sup>.

Mr. J. G. Diefenbaker (Lake Centre): I should like to ask a question of the Minister of Labour in regard to war-time labour regulation P.C. 1003.

"Does this proposal apply to professional engineers, mining engineers, architects or professional chemists? If it does, I would ask if it is the intention of the government 'to withdraw them from its application.'"

Humphrey Mitchell (Minister of Labour) Liberal :

"Mr. Speaker, while I should not like to anticipate the functions of the wartime labour relations board, set up under the authority of the order in council, and while I should not like to interpret those functions, I would say to my hon. friend that this is still a free country"

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<sup>245</sup> <https://archive.org/stream/labourgazette1947p2cana#page/1448/mode/2up/search/Air+Engineers'+Society> - The Labour gazette July-December 1947 - by Canada. Dept. of Labour - Publication date 1947 - Topics Labor and laboring classes - Publisher Ottawa, Queen's Printer - Collection robarts; ontario\_council\_university\_libraries; toronto - Digitizing sponsor University of Guelph, University of Windsor, York University and University of Toronto Libraries - Contributor Robarts - University of Toronto - Language English - Volume 47 pt. 2

<sup>246</sup> <https://www.britannica.com/topic/organized-labor/The-United-States-and-Canada#ref540199>

[https://www.labour.gov.on.ca/english/about/cwr\\_interim/chapter\\_4\\_1.php](https://www.labour.gov.on.ca/english/about/cwr_interim/chapter_4_1.php)

[https://www.labour.gov.on.ca/english/about/cwr\\_interim/chapter\\_4\\_1.php](https://www.labour.gov.on.ca/english/about/cwr_interim/chapter_4_1.php)

[https://www.labour.gov.on.ca/english/about/cwr\\_interim/chapter\\_4\\_1.php](https://www.labour.gov.on.ca/english/about/cwr_interim/chapter_4_1.php)

## Notes on "Civil Aviation"

Karl Kenneth Homuth - National Government : "Don't be too sure of that, now."

Humphrey Mitchell (Minister of Labour) Liberal: If hon. members in their judgment wish to form a trade union, I guess they could apply to the wartime labour relations board, as a trade union, to settle their differences.

John George Diefenbaker - Progressive Conservative: Is that the best answer I can get?

16 February 1944 the signatories to the BCATP agreed to begin a gradual reduction in the plan. Because of a backlog of trained aircrew the RCAF in June 1944 ceased recruiting aircrew and by October the closure of schools was stepped up. As an example of the excessive number of aircrews, during 1944 and 1945, it was common practice for aircrew to receive an Army commando course prior to proceeding overseas and as a result of a shortage of flight engineers, a second pilot. (pilots were in short supply as late as 1943) with flight engineers training was supplied.

February of 1944 : CF-AND destroyed by fire at Nakina, Ontario while Austin Airways mechanics were heating her engine [using blow-torches].

10 March 1944 : Comments made in the House re "PRIVILEGE" by the Hon. Mr. McLenaghan <sup>250</sup> in response to Mr. Harry Leader (Portage la Prairie)<sup>251</sup>:

1. *"The record should be kept straight in fairness to all members of the [...] profession".*
2. *"When a layman - Meaning myself - presumes to make statements concerning a matter [...] of which he has no knowledge, he is assuming a great onus,"*
3. *"A great onus rests on a public man, who makes statements and blazons them to the world.*
4. *Irreparable harm can be done unless all the facts are known.*
5. *Such statements could be damaging unless based on facts, creating in the minds of "people" [...] falsehoods based [...] "experiments" which have not stood the test of time,"*
6. *the remarks [...] made in the house [...] were based on facts substantiated by [...] authority, and*
7. *the reflection [...] made upon "people of the profession or trade" [...] was based on facts I had from men who should know. [and should know better!]*
8. *I had no other object in view [...] but to give something to the world that might help others [...]"*

01 May 1944 : The Commonwealth Prime Ministers (Empire Premiers) Meeting<sup>252</sup> (CPMM) replaces the Imperial Conference in London. Lord Beaverbrook , head of the UK Ministry of Aircraft Production ... London.

1. William Lyon Mackenzie King - Prime Minister of Canada
2. Field-Marshal Jan Smuts - Prime Minister of South Africa
3. Sir Godfrey Huggins - Prime Minister of Southern Rhodesia.
4. Peter Fraser, Premier of New Zealand
5. John Curtin - Prime Minister of Australia
6. Winston Churchill Prime Minister of Great Britain
  1. members of the British Imperial War Cabinet.
  2. Anthony Eden
  3. Clement Attlee,
  4. Lord Beaverbrook

03 May 1944 : Stedman memo to CWC re "problems experienced by RCAF to this point are a result of NOT HAVING a domestic aircraft or manufacturing capability to meet RCAF needs" .. this also would reflect the inherent inspection capacity required during mfr that tied to design. Stedman noted that "Canada was losing talented aeronautical personnel to other countries, and that if government was to support mfrs' it should do so to keep these people at home. CWC took notice.

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<sup>250</sup> Statement made in the House by the Hon. J. o. McLenaghan, Attorney General of the province of Manitoba - as Minister of Health. in response to Mr. Harry Leader - in reference to statements made in an article in "The Winnipeg Free Press" 10 MARCH 1944.

<sup>251</sup> Statement made in the House by the Hon. J. o. McLenaghan, Attorney General of the province of Manitoba - as Minister of Health. in response to Mr. Harry Leader - in reference to statements made in an article in "The Winnipeg Free Press" 10 MARCH 1944.

<sup>252</sup> <http://www.britishpathe.com/video/empire-conference>

## Notes on "Civil Aviation"

10 May 1944 : In the House of Lords on Wednesday , May 10th<sup>253</sup>, My Lords, I beg to move that the House do sit in Secret Session. Moved, That the House do now sit in Secret Session.—(Lord Templemore.) On Question, Motion agreed to, and ordered accordingly. The Official Reporter then withdrew. House in Secret Session. Sitting then resumed in Open Session.

**Mr. Stokes** asked the Secretary of State for Air how many British and American bombers, respectively, were lost over Germany and Northern Europe during the first four months of 1944.

**Sir A. Sinclair** "During the first four months of 1944, 1,041 British and 1,117 U.S.A.A.F. bombers operating from this country were reported lost over Germany and Northern Europe"

The 9th Marquess of Londonderry (Edward Charles Stewart Robert Vane-Tempest-Stewart) asked the (British Imperial) Government to make a statement on their proposed policy for the development of British civil air transport on the following matters :

- A. Ministerial responsibility for civil aviation in the United Kingdom ;
- B. **international regulation** of civil air transport;
- C. air lines
  - (i) internal air lines
  - (ii) inter-Commonwealth air lines
  - (iii) Empire air lines
- D. **chosen instruments**
- E. subsidies
- F. types of aircraft
- G. the scope and powers for operating companies.

I. **Lord Rennel** expressed the view (Whose view?) that

- A. a system of civil aviation which was under the direct control of the Air Ministry would never take us anywhere.
- B. While the U.S. Air Transport Corps had earned the praise and good will of people it had carried, he could not say the same for the R.A.F. Air Transport Command.
- C. American air transport was run by people who realised they were pioneers of future civil aviation, and the difference between the two systems was that the Americans were air-minded and were trying to develop civil aviation.

II. **Air Transport Command** (declared)

- A. It was not doing anything of the sort.
- B. Almost any control would be better than that of the Air Ministry at the present time and there was probably a good argument for making a **Department of Civil Aviation in the Ministry of War Transport** after the war.

III. **Lord Beaverbrook**, in replying, said that

- A. Transport Command was intended to serve the military machine
- B. Transport Command was not for civil purposes
- C. He was satisfied that B.O.A.C. would continue to function as in the past, with satisfaction to the community.

The question of the chosen instrument was fixed by Statute. Ministerial responsibility for civil air transport in the United Kingdom rested with the Air Ministry, and the responsibility for co-ordinating future policy lay with the committee of which he (Lord Beaverbrook) was chairman, but this committee was not an executive body and had no administrative duties.

Internal air lines were controlled by the Air Ministry, and the findings of the Commonwealth conversations on inter-Commonwealth and Empire air lines provided for adequate regulation and included plans for an all-red air route.

Although we must admit that the U.S. had a long lead over us in air transport, we had a number of excellent designs for new types, and although progress had been disappointing no blame could be attached to anyone— it was entirely due to the prior needs of war. The York was in small-scale production and giving excellent service with Transport Command and B.O.A.C. A York recently flew 6,857 miles from this country to Delhi in a flying time of 32 hours, which gave an average ground speed of 214 m.p.h. The aircraft carried a payload of four tons on this flight. The Shetland flying boat was due to make its maiden flight in a few weeks' time, but would not yet be put into production. The transport version of the Halifax might fly late this year, but would not be put into production this year; whilst a De Havilland feeder-line small transport machine might fly in about 12 months' time. The Tudor had been held up by military necessities and could not be put into service for some time yet - Flight pg 523

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<sup>253</sup> <http://hansard.millbanksystems.com/lords/1944/may/10/civil-air-transport>

## Notes on "Civil Aviation"

THE COMMONWEALTH CONFERENCE MAY, 1944 By GRANT DEXTER, WINNIPEG FREE PRESS

"The conference took place at a time described by Mr. Churchill as "the most deadly climax" of the Post-war policy in the widest concept was the chief question to be discussed.

This discussion would follow from the Atlantic

Charter, the Declaration of the United Nations, and the Moscow Declaration (Article Four) which recognized):

". . . the necessity of establishing at the earliest practicable date a general international organization, based on the principle of the sovereign equality of all peace-loving nations, and open to membership of all such states, large and small, for the maintenance of international peace and security."

The structure of this international organization had already been studied by the Big Four and further meeting to draft the final .. it had been announced, would be held in the near future.

The British government, it was made known, had prepared a plan. It may be assumed that the other Commonwealth governments had been similarly engaged.

But before the British government entered these further, and perhaps final, negotiations it was desirable that there should be a meeting of the heads of the Commonwealth governments. It may be assumed that whatever plan the British experts had devised, it would not be finally adopted until the views of the other governments had been obtained.

"The British government would have gone into the negotiations with the United States and Russia confident that its views were acceptable to the other governments of the Commonwealth. But when the conference assembled on May 1, there was no assurance of unanimity.

Only one government — the Canadian government— had defined its position clearly.

Mr. King, (the Canadian Prime Minister) did so in the (British) House of Commons on January 31, 1944.

He (the Canadian Prime Minister) then declared (Canada) in favor of the kind of world organization forecast in the Moscow Declaration and against any kind of Commonwealth centralization looking to a post war world to be ruled by Titans (of which a unified commonwealth would be one).

Collaboration and consultation—yes; unification in any form of empire institution or otherwise—no."

Source : WINNIPEG FREE PRESS PAMPHLET NO. 1 "THE COMMONWEALTH CONFERENCE MAY, 1944" By GRANT DEXTER

(The Decision of the Canadian Government at the Conference resulted in the Government of Canada adopting an American ideology on Aeronautics and Aviation Engineering , maintenance and inspection processes.. This further served as a means to alter the role of the Canadian Air Engineer (Aeronautical Ground Engineer) towards an American styled "Aircraft Maintenance Engineer in Charge" with junior technicians reporting to the AME. In Canada, the Canadian Government replaced the term "Air Engineer" (being the person tasked with inspection of aircraft and aircraft engines etc during manufacture, repair and maintenance and attesting to the compliance with airworthiness standards and legislation) their legislative documents with the American term "Aircraft Maintenance Engineer" or AME with US Military trades-persons trade categories of M, E and S replacing the former British terminology A, B, C and D in the Canadian licensing structure for Civil Aviation Safety Inspectors.)

18 May 1944, Flight pg 518 : In connection with the recent Anglo-American talks, Lord Beaverbrook threw some light on what was evidently in his mind at the Press conference when he stated that "Britain has had to make concessions".

## Notes on "Civil Aviation"

It now appears that on our side we were prepared to subscribe to what has been termed "the Canadian Draft Convention", which went into great detail concerning "international control".

Mr. Berle, on behalf of America, wanted something more elastic, and the principles agreed upon at the Imperial Conference last October were found acceptable.

America's promise, made by Mr. Berle, that aircraft will be made available to us after the war on a nondiscriminatory basis was another reassuring fact.

Lord Beaverbrook's statement that the United States and Great Britain are in agreement on the broad principle that there must be control of subsidies and of international standards, as well as an elimination of uneconomic competition and an equitable participation in world air transport, indicates that although the forthcoming international conference will have many problems to solve, there is no disagreement on basic principles.

18 May 1944, Flight pg 534 Aircraft Engineer Training - Recommendations by the S.B.A.C. Committee:  
The Society of British Aircraft Constructors have for some time past had under consideration the importance of adequate and co-ordinated training in the aircraft industry and, as we announced recently, under the auspices of the Society, a Sub-Committee of Apprentice Supervisors has met and evolved a set of recommendations for the training of aircraft engineering apprentices.

These recommendations have now been accorded the approval of the Council of the Society.

The Committee are of the opinion that a more careful and scientific selection of apprentices is desirable and that the most useful men for the aircraft industry of the future can be obtained from a well thought out apprentice training "scheme" (Programme) in which all firms in the industry would cooperate by planning their training "schemes" (Programmes) along similar lines.

Such a "scheme" (Programme) will produce men who will have had:

1. practical training in the [trades'] workshops
2. theoretical training in [trades] technical schools,
3. practical training in the [Engineer's] workshops
4. theoretical training in [Engineer's] technical schools,
5. practical training in other educational establishments
6. theoretical training in other educational establishments.

From the general recommendations it appears that at each [manufacturer's] works there should be a Board of Interview, whose duties would include the selection of "engineer apprentice" [entrants] from outside [trade] sources and from [within] the firms' trade apprentices.

Such a Board would, of course, have to consist of engineers of experience and understanding and could, for example, include:

1. the chief engineer,
2. the works manager and
3. the firm's appointed apprentice supervisor.

No boy is to be admitted to an apprenticeship below the age of 16,

The training should not cease before the age of 22

the Board may, in exceptional circumstances, admit a candidate who is older than 18 years and will arrange, if he is admitted to a shortened apprenticeship, that his standard of theoretical training will be correspondingly higher.

while undergoing Trade apprentice training a boy may prove by their outstanding ability that they are deserving of upgrading.

Outstanding [trade] apprentices should have the opportunity of transferring [upwards] to the category of "aeronautical engineering apprentice" (aircraft or engines).

Any trade apprentice who obtains the ordinary National Certificate should be considered by the Board of Interview for up-grading.

\*\*\*\*\* Form of Indenture \*\*\*\*\*

Among the other recommendations put forward are that a form of agreement between:

1. the company
2. the apprentice
3. and the parents of the apprentice

## Notes on “Civil Aviation”

should be provided upon the lines of the form published by the Engineering and Allied Employers’ National Federation.

Further, the practice of requiring premiums for apprenticeship training should be discontinued, and the apprentice should be paid the rates of wage agreed to by the above Federation.

This appears to be a commendable recommendation in that the lad of capability with ambition and zeal to “get on in the industry” is no longer to be handicapped by the unfortunate financial circumstances of his parents.

The minimum academic qualifications for apprentice aeronautical engineers should be the possession of one of the recognised School Certificates with credits in mathematics and a science subject.

Consideration should, however, be given to applicants who have other approved qualifications, such as a diploma of a Junior Technical School.

Boys entering a works to take up a [trades] apprenticeship should undergo a probationary period of six months.

[Boys entering a works to take up a [Engineers’] apprenticeship should undergo a probationary period of six months.]

At the end of his training, if his apprenticeship has been completed satisfactorily, the boy should be given a certificate to this effect.

Whether, on the satisfactory completion of his apprenticeship, the applicant will be required to remain for a further period in the employ of the firm is not made clear.

It has been the custom with certain of the firms in the past to insist on retaining the services of an apprentice after the completion of his apprenticeship up to a period of two years; possibly this clause may still have to be included in the present proposals.

To ensure that he shall receive a sound engineering training, it is proposed that the apprentice should pass through all the engineering departments of the works and should spend not less than two-thirds of his apprenticeship in these departments, being moved from one section or department to another following a set syllabus in the following order : —

The Aeronautical Engineer Apprentice : — Aircraft

- a) Pattern-making and foundry work (where available in the works or in a technical school in the locality).
- b) Fitting work. Detail fitting. Aircraft Sub-assemblies and Aircraft erection ; engine installation.
- c) Machining. On all the usual types of machine tools in the works.
- d) Tool Room. It is desirable that all apprentices should pass through the tool room for a short period, say, three months.
- e) in order to acquire a knowledge of precision work, all apprentices should spend some time in a calibration shop.
- f) Sheet metal work.
- g) Aircraft electrical installations.
- h) Bench equipment and jig assembly.
- i) Final erection.

Having passed through the general training referred to above, the apprentice should then receive a more specialised training in one or more of the following departments, according to his capabilities and inclinations : —

- a) Material testing and inspection.
- b) Experimental and research department.
- c) Aeronautical Laboratory.
- d) Aircraft Design offices, or jig and tool drawing office.
- e) Rate - fixing (price determination) department.
- f) Estimating and planning.

The Aeronautical Engineer Apprentice— Engines

This apprentice should pass through the following sections or departments : —

- a) Pattern making and foundry work.
- b) Machining. On all the usual types of machine tools in the works.
- c) Fitting and erecting work (all stages).
- d) Tool room.

As for aeronautical engineering apprentice — aircraft engine testing.

## Notes on "Civil Aviation"

Having passed through the above training, the apprentice, according to his capabilities and inclinations, may receive specialised training in one or more departments : —

- a) Material testing and inspection.
- b) Experimental and research department.
- c) Laboratory.
- d) Design offices, or jig and tool drawing office.
- e) Rate - fixing department.
- f) Estimating and planning.

Obviously not every, firm in the aircraft industry will have all of these facilities for the training of apprentices, and it is suggested that arrangements should be made with other firms in the industry for "transfer of apprentices".

Such transfers might be arranged on a reciprocal basis with firms outside of the industry, and in this respect the S.B.A.C. will be prepared to assist.

A most important feature of the "scheme" (Programme) is that the Board of Interview may recommend in special cases that the apprentices should have the opportunity, by means of the S.B.A.C. Scholarship or by special assistance from the industry , to enter a Senior Engineering College or University , and in any case all engineering apprentices would be encouraged to join the Royal Aeronautical Society or the Institution of Production Engineers.

For theoretical and practical work, training schools established within the works and run by the firm are considered the best from the point of view of discipline, attendance and saving of time in travelling , etc ., and the more general establishment of workshop schools is recommended.

When first entering a works, apprentices should be assured of training in the use of hand and machine tools, and should spend a **minimum period of six months on this training before entering the works.**

Where it is not possible to arrange for a workshop school, arrangements would be made for the apprentice to attend technical classes at the local institutes on one or two days a week.

In this respect very satisfactory arrangements are already in force, and it is not considered practical nor desirable to discontinue the work already being done by these technical schools.

In view of this, and where circumstances dictate, an arrangement should be arrived at to dovetail the programme of works schools and technical schools in order to meet the full need of theoretical and practical training of each works in each locality .

The exclusive use of evening classes as a means of technical instruction is considered unsatisfactory.

Provision should therefore be made for daytime attendance at technical schools.

Apprentices pursuing advanced courses of study, such as for the Final "B.Sc. Eng." degree, or the Higher National Certificates, might well be given at least a day and a half for their studies.

In some places the local technical schools are close at hand and it is no hardship for boys to attend the classes provided.

In other places these technical schools are at a great distance from the works, thus causing serious difficulties for the boys to attend classes.

It is in places where the distances to the local technical schools are great that particular effort should be made to provide the technical education in a works school, and here the Board of Education are able to give certain assistance, details of which can be obtained from the Board of Education .

The local Education Authorities also might be called upon to assist. [what was the viewpoint of the "Educators" ? did they undermine the technical education ?]

If satisfactory facilities exist in a technical school in the district, the theoretical training can be given in this school, and there should be co-operation between the works and the school so as to ensure that the theoretical work is directly associated with the practical work in the factory .



## Notes on "Civil Aviation"

For instance, the works' could supply drawings, technical information and samples of construction to the technical school for the purpose of technical studies.

It is desirable to have a common syllabus of technical training, and a great amount of reorganisation is still called for in connection with the theoretical training to be given to apprentices in the various Government [public] technical schools.

There is a great variation in the facilities available in various districts, and there is also variation in the syllabus of training.

Some schools are working in close co-operation with the aircraft or engine [manufacturing / operating ?] firm nearest to them, and a good standard of technical training is being imparted.

In other places the facilities are not so good, and every effort should be made to improve them.

The ideal curriculum should provide classes of instruction up to the standard of the Higher National Certificate in mechanical and production engineering.

With regard to "production engineering",  
a Joint Committee of :

1. the Institution of Mechanical Engineers,
2. the Institution of Production Engineers and
3. the Board of Education

prepared and issued specimen syllabuses for the general guidance of those colleges and schools which wish to inaugurate the Higher National Certificate courses in production engineering.

The "pamphlets which gave details of the syllabuses" could be obtained from the UK Board of Education.

Apprentices who have a leaning towards "management and production engineering" should be able to obtain the necessary training and should be encouraged to take the Higher National Certificate [HNC] courses, which can be provided if the demand is sufficient.

[by the mid 1960's the HNC was no longer being supported as the ICAO required education was only that of a trades technician - not that of a Aeronautical or Production engineer. Did ICAO cut it's own throat?]

Flight 18 may 1944 pg 537

06 June 1944 :Parliament - Ottawa - the Hon. C. D. HOWE (Minister of Munitions and Supply - Liberal) moved that the house go into committee to consider the following resolution: That it is expedient to introduce a measure to amend the Aeronautics Act to provide for the establishment of an air transport board to:

1. perform the functions of a licensing and regulatory body in respect of commercial air services and
2. to advise the minister on matters connected therewith.

Provision will be made by the said measure for the payment for services of the members of the board and the employment of necessary officers, clerks and employees.

C. D. HOWE : The bill before the committee amends the Aeronautics Act of 1922 in order to give effect to the government's announced policy on domestic civil aviation. The discussion on that subject a few weeks ago covered the government's intention in that regard, and this amendment to the Aeronautics Act puts into force the policy announced at that time.

The effect of the amendments is to form a board of three, a chairman and two members, who will administer the Aeronautics Act, take over the duties now being performed by the board of transport commissioners in regulating civil aviation as well as the duty of assigning air worthiness certificates and of licensing aviation enterprises within Canada. In addition, the board will function to advise the government as to ways and means of advancing civil aviation. The board will take the initiative in laying out routes, within Canada and overseas, which promise possibilities of profitable operation and will guide the government in seeing that these routes are operated by Canadians who are capable of carrying out such undertakings. The judicial functions of the board are not new, but the functions of the board as advisers to the government on aviation policy are new, and will, I think, be helpful in bringing about the rapid development of civil aviation, both internal and external.

In general, the act follows the provisions of the Aeronautics Act of the United States.

## Notes on "Civil Aviation"

The functions of this board will be similar to the functions of the civil aeronautics authority of the United States.

I think detailed discussion should await second reading of the bill, when we shall have the amendments in detail before us, and when a more complete discussion of the purpose of the bill and the means of effecting that purpose can be arranged.

In the meantime I shall be glad to answer any questions on the subject matter of the resolution that hon. members may wish to ask.

Howard Charles Green - National Government : *The Aeronautics Act was passed in 1919 and amended in 1922*

C. D. HOWE : Yes.

Howard Charles Green : And has not been touched since. In that act the Minister of National Defence is named as the minister in charge. I believe that when the transport board was set up it was given quite wide powers over air transportation in Canada, despite the terms of the Aeronautics Act. Will the minister explain whether now one minister is to administer the Aeronautics Act, or whether there are to be two, one dealing with civil aviation and the other with military aviation, because, as it now reads, this act would seem to cover both military planes and passenger and freight planes.

C. D. HOWE : The Department of Transport Act, 1936, transferred the control of civil aviation from the Minister of National Defence to the Minister of Transport, and since 1936 the Minister of Transport has been the minister named in the act. Military aviation is an entirely separate branch; it has its own airworthiness standards and its own regulations governing military operations.<sup>254</sup>

Howard Charles Green : But it comes under the Aeronautics Act, does it not?

C. D. HOWE : No; it comes now under the regulations of the Department of National Defence for Air. Only civil planes come under the civil Aeronautics Act.<sup>255</sup>

Grote Stirling - National Government : *But the Aeronautics Act has not been amended yet*; it must have been put in abeyance.

C. D. HOWE : The act has been amended several times since 1919, but I will speak only of the practice. I have been administering the act since 1936, and I can say that the Minister of Transport has no jurisdiction over military planes, which come entirely under the jurisdiction of the Minister of National Defence. In the amendments proposed, the minister means the Minister of Transport except for military matters, in which event the minister means the Minister of National Defence. Section 5 of the Department of Transport Act, 1936, reads: "**The control and supervision of the civil aviation branch** of the Department of National Defence is hereby **transferred from the Minister of National Defence to the Minister of Transport**, and **the said branch is hereby transferred from the Department of National Defence to the Department of Transport**".

Howard Charles Green : Then is the Minister of Transport to be the minister in charge under the Aeronautics Act as it is to be amended?

C. D. HOWE : A situation exists there which I have explained in the house once or twice already. When I was transferred from the ministry of transport to the ministry of munitions and supply, by arrangement with the then Minister of Transport and by direction of the Prime Minister, and by the exercise of the Transfer of Duties Act, the air services branch of the Department of Transport was transferred for administration to the Minister [DOT] of Munitions and Supply. That was done [DOT] because one of the important duties of the ministry of munitions and supply at that time was the building of airports. The air services branch of the Department of Transport had developed a highly skilled engineering personnel for the building of airports, and it was my feeling that the Department of Munitions and Supply should not be required to duplicate that personnel. It was and is the duty of the Minister of Munitions and Supply to construct the airports required by the armed services, and the practical way of bringing about an organization to do such work seemed to be to transfer the air services branch of the Department of Transport to the new ministry. Therefore the air worthiness branch is administered at the present time by the Minister of Munitions and Supply.

Howard Charles Green : Who will be administering the new [Aeronautics] act?

C. D. HOWE : The Minister of Munitions and Supply [until the Transfer of Duties Act is again called upon to move it back to the department from which it came]

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<sup>254</sup> <http://www.lipad.ca/full/1944/06/06/16/>

<sup>255</sup> <http://www.lipad.ca/full/1944/06/06/16/>

## Notes on "Civil Aviation"

Howard Charles Green : Why is it necessary to go back to the Aeronautics Act and give the minister, who apparently now will be the Minister of Munitions and Supply, the very wide powers contained in that act? They are very much wider than the powers given to the transport board, as the minister knows. Why was it necessary to give such very wide powers as are contained in the Aeronautics Act?

C. D. HOWE : The powers contained in the Aeronautics Act are those required for the control of civil aviation. The Department of Transport only exercised certain regulatory functions, but the Aeronautics Act covers a great many matters that are not at present within the purview of the board of transport commissioners. That board [board of transport commissioners] is a judicial body, which simply interprets legislation, and does not initiate projects. It acts as a judicial body in connection with Air matters.

Howard Charles Green : Are the powers under the Aeronautics Act to be reduced?

C. D. HOWE : No.

Howard Charles Green : The minister [of Munitions and Supply] himself will have all the powers that are at present contained in the Aeronautics Act?

C. D. HOWE : Yes.

Howard Charles Green : Some of those powers are set out in section 3, which states: It shall be the duty of the minister

- (a) to supervise all matters connected with aeronautics;
- (b) to study the development of aeronautics in Canada and in other countries, and to undertake such technical research as may be requisite for the development of aeronautics, and to cooperate with other institutions in carrying out such research;
- (c) to construct and maintain all government aerodromes and air stations, including all plant, machinery and buildings necessary for their efficient equipment and upkeep;
- (d) to control and manage all aircraft and equipment necessary for the conduct of any of His Majesty's services; [That would be wide enough, of course, to include the post office or any other service.]
- (e) to operate such services as the governor in council may approve;
- (f) to prescribe aerial routes;
- (g) to cooperate with other officers of His Majesty, and to assist in the carrying out of any services under their jurisdiction which may require aerial work of any nature, and to collaborate with the officers employed in existing air services of His Majesty in such extension of their present work as the development of aeronautics may require;
- (h) to take such action as may be necessary to secure, by international regulation or otherwise, the rights of His Majesty in respect of his government of Canada in international air routes;-

Then we come down to paragraph (k), which reads:

- (k) to investigate, examine and report on all proposals for the institution of commercial air services within or partly within Canada or the limits of the territorial waters of Canada. I understand that all these powers are to be given the minister?

C. D. HOWE : That is correct.

Howard Charles Green : Is it the intention to have Trans-Canada Air Lines operated by the government under this act? As I see it, [the new act allows] Trans-Canada Air Lines can be operated by the minister direct; that is what it amounts to.

C. D. HOWE : Trans-Canada Air Lines has its own act.

It operates under the Trans-Canada Air Lines Act.

Its operations are *subject to the regulations of the Aeronautics Act*, just as the operations of any other service are subject to the Aeronautics Act.

Karl Kenneth Homuth (National Government) : Which [Act] takes precedence? [*the Aeronautics Act or the Trans-Canada Air Lines Act*]

C. D. HOWE : That is provided for by the amendment.

The Trans-Canada Air Lines Act provides for management for the Trans-Canada Air Lines.

It also provides the manner in which it shall be assigned routes, and the limits governing its operation.

## Notes on "Civil Aviation"

I assume *that the minister, under the Aeronautics Act, will confine his attention to such matters as are not covered by the Trans-Canada Air Lines Act.*<sup>256</sup>

Howard Charles Green : Then the situation will be that the Trans-Canada Air Lines *will no longer be operated by Canadian National Railways*, but *will come under and be operated directly by the government*.

C. D. HOWE : No, not at all.

The only difference will be that the directors of Trans-Canada Air Lines will not be directors of the Canadian National Railways. Trans-Canada Air Lines will be operated by a board of directors, just as the Canadian National Railways is operated by a board of directors. But the two *will not be operated by the same* board of directors.<sup>257</sup>

Howard Charles Green : Will the board of Trans-Canada Air Lines be civil servants? Or outsiders

C. D. HOWE : No., Yes, outsiders

Howard Charles Green : But they [the outsiders ] will be very directly under the minister

C. D. HOWE : No more so than the board of directors of the Canadian National Railways.

Howard Charles Green : But if it is administered under this act it will be very directly under the minister.

In effect, **it makes the minister a dictator** in respect of all the airways in Canada, does it not? <sup>258</sup>

C. D. HOWE : **Perhaps** so; but, who would you suggest should be dictator?

Howard Charles Green : I do not think there should be a dictator.

Thomas Langton Church - National Government : This resolution is presented to the committee in a very awkward fashion. In the first place, the minister is to create a board just for the purpose of licensing and regulating.

The present Minister of Munitions and Supply was formerly Minister of Transport.

I very well remember when a board such as he now proposes to appoint in respect of commercial aviation in Canada was appointed to regulate railways.

In the first place the Board of Railway Commissioners for Canada was set up.

The organization is now known as the board of transport commissioners. At that time it was limited to railway rates. We have seen what it did with this country. That board did not regulate anything.

It was a political board, and there was afterwards added to it control over express, telephone companies and all that kind of thing. It was given wide jurisdiction.

I have looked into the original Aeronautics Act the minister now proposes to amend. [what did Thomas Langton Church find?]

This parliament will run into all kinds of damage suits if it proceeds with this measure, because I believe the amendment proposed to the statute law, as now suggested by the Minister of Munitions and Supply, is ultra vires [beyond the legal power or authority] of this parliament, and is confiscatory since bonds were sold of one aviation company.<sup>259</sup>

I should like to find out what the Minister of Justice and Attorney General of Canada has had to say about this.

Was he [the Minister of Justice and Attorney General of Canada ] consulted in respect of this amendment?

Or was this matter looked into by the lawyers for Trans-Canada Air Lines - [being] the minister's own lawyers?

Were they, [the lawyers for Trans-Canada Air Lines ]the legal people who drafted this resolution which proposes an amendment?

I protest against the measure. We are now in the seventy-second day of the session. It is hopeless for the minister to think he can have an act of parliament passed through like this, one which upsets the whole policy of the country in regard to civil aviation. The proposal for civil aviation would involve millions of dollars, and it will interfere with the rights, the functions, the statutory privileges and property rights of two other large railway corporations.

It is practically confiscatory [the act of something being taken away from someone by a government]

That is my opinion with respect to the proposed bill to set up the board.

Why does a minister of the crown need a board to advise him as to the way to arrange licences and regulations?

Is a minister of the crown not responsible to parliament?

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<sup>256</sup> <http://www.lipad.ca/full/1944/06/06/16/>

<sup>257</sup> <http://www.lipad.ca/full/1944/06/06/16/>

<sup>258</sup> <http://www.lipad.ca/full/1944/06/06/17/>

<sup>259</sup> <http://www.lipad.ca/full/1944/06/06/17/>

## Notes on "Civil Aviation"

Under our parliamentary system of government, is he not responsible to the country?

Is he not responsible to the people for the very large expenditures which are to be made?

This is a leap in the dark.

This whole programme and policy of civil aviation proposed by the minister, and this regulatory board *do not commend themselves to the wisdom and judgment of the people of Canada.*

We had a long debate on this matter only a month ago. Now we have before us a resolution, to be followed by a bill.

I do not believe parliament has power to pass such legislation in its present form.

If we do, we shall get into all kinds of trouble, because we cannot have what we call freedom of the air under a regulatory body such as this.

Here we have a minister of the crown, asking parliament to pass a resolution on which a bill is to be founded setting up a regulatory board, which will also advise on licences, *with powers which no minister of the crown can have under our constitution.*

Not only is this wrong, from the point of view of law, but it is bad public policy.

This was never attempted before.

A board is to be set up, and it is to have supervision over a minister of the crown in respect of the expenditure of money allocated to his department.

It will have power over functions which he would have, under our constitution.

We are taking a leap in the dark. It will lead to all kinds of trouble.

Certainly it is not in the interests of civil aviation. I believe it will sound the death knell of civil aviation.

More than a year has passed since 02 April 1943, and in that time nothing has been done.

To-day a report was withdrawn by the hon. member for St. Boniface, as chairman of the select committee on railways and shipping.

They went into matters connected with Trans-Canada Air Lines and the policy herein of the minister.

An inquiry was conducted, and questions were asked.

I was surprised to note what was done this afternoon.

We saw that the report of the committee was presented; as a matter of fact it was presented last Friday.

There was reference made in that report to the policy contained in this resolution, namely, that of civil aviation.

There was further reference to licensing, and all that kind of thing.

Then the chairman of the committee rose in his place this afternoon and, all of a sudden, withdrew his report.

What was his reason for doing that?

Because the report would have to be discussed' before this resolution could come up.

Under the rules of the house with respect to anticipation it could not be accepted, when this resolution was to be introduced, and when there was to be a discussion as to the setting up of a regulatory body with powers to issue licences, and all that kind of thing.

I must confess I cannot understand it, and I never saw that procedure before.

The committee was to go over these expenditures of the Canadian National Railways, and affiliated bodies, including Trans-Canada Air Lines. It did that. Witnesses were examined, and there was a good deal of the hallelujah chorus in the committee about what a wonderful system they had. Yet when one of our own ministers wanted to go across to the continent we had to go to Washington and get a Liberator.

Civil aviation is only in its infancy in Canada.

I have been before the board of railway commissioners many times in the past and also before the board of transport commissioners.

I have appeared in connection with telephone rates, freight rates, passenger rates and express rates.

They never regulate anything.

The applicant always gets what he asks for, with interest.

And this particular board will be nothing but a board of moonshine.

It will appoint a lot of officers and servants and agents and other people-to do what?-to help strangle the movement.

I hope the committee will stop, look and listen before the minister is permitted to make this step.

I can say this: I really believe he is wrong.

He is wrong in policy;

he is wrong in principle;

he is wrong in the law.

## Notes on "Civil Aviation"

It is going to mean confiscatory legislation with respect to a very fine transportation company which has borne the burden and heat of the day.

As I said a month ago when this matter was up, I think it should be sent to a committee of the house where the minister's policy could be thoroughly considered and everybody concerned given a hearing.

Stanley Howard Knowles (Whip of the Co-operative Commonwealth Federation) : The minister realizes, in introducing this bill, that in certain instances where there is a concentration of power there is only one thing to do, namely, to place that power in the hands of the people, and in the sense in which this bill proposes to do that with respect to civil aviation it has our support.

Thomas Reid : If you lived in British Columbia you would not be so keen on public control [power in the hands of the people]

C. D. HOWE : The bill provides that there shall be no common ownership of surface carriers and air carriers.

Howard Charles Green : In what way is the new board, the air transport board, subject to the minister? What is the tie between the minister and the air transport board?

C. D. HOWE : The minister is responsible *for the administration of civil aviation* in Canada.

The board has certain judicial functions in its own right, and *can decide certain judicial matters*.

Karl Kenneth Homuth : Would their [The board] judicial functions be within the control of the minister, or Would their [The board] judicial functions be separate from the minister?

C. D. HOWE : The judicial functions are directly under the control of the board, except that in certain cases there is an appeal to the minister.

But the government is not attempting to divest itself of its responsibility for administering civil aviation.

The government's experience, and my own, are wholly against an attempt of that sort.

We had a perfect example of that in 1932, when the Conservative government of that day undertook to divest itself of responsibility for the administration of the Canadian National Railways. It set up a trusteeship of three men to administer the property, and by 1936, when the trusteeship was dissolved, it needed about one or two more years to make it a trusteeship in bankruptcy. The [rail] road was rapidly heading that way. The government at that time again assumed its responsibilities for the railway, and the [...] I could mention, *if I were not getting fairly close to home*, other examples where a government has tried to divest itself of responsibility, without success to the government or prosperity to the object.

Karl Kenneth Homuth : We might go near home on that, eh?

C. D. HOWE : Yes. So that we shall not discuss that.

Nevertheless this government believes in government responsibility for government operations, and the amendments proposed to the act are not inconsistent with that belief.

Howard Charles Green : In other words, the air transport board is to be directly under the minister?

C. D. HOWE : Correct.

Mr. GREEN: The minister said that that, as I understand it, was not the position of the board of transport commissioners.

Mr. HOWE: That is correct, yes. The board of transport commissioners is a judicial body equivalent to a court, and its duty is to administer an act. That board has no function beyond the administration of the act, a wholly judicial function.

This is a board which is both judicial and advisory.

Mr. GREEN: In other words, the board of transport commissioners had to decide whether an applicant for a licence should get the licence, on certain well-defined principles, which might be summed up as public convenience and necessity, and it had also to follow certain judicial principles in deciding what tolls would be charged.

Mr. HOWE: That is right.

Mr. GREEN: As I understand it, this new transport board will no longer be subject to those stipulations; it will no longer have to decide on the basis of public convenience and necessity whether or not a licence should be granted?

Mr. HOWE: The jurisdiction is set out in the bill. I think if my hon. friend will delay this discussion until he sees the bill he will find that his fears in that regard are unnecessary.

Mr. GREEN: But in effect, *now the minister is over and above that air transport board*?

Mr. HOWE: [yes, but] Not in judicial matters.

Mr. GREEN: While he was "not over and above the board of transport commissioners"? Is that not so?

Mr. HOWE: I might point out that the board has two sets of functions.

## Notes on "Civil Aviation"

One is purely judicial; that is, *when deciding matters of fact the board will be governed by the act*; in that case the minister has no right to overrule them, except in the event of an appeal.

Mr. GREEN: Would it not be wise to maintain some board that did act in a judicial manner and let perhaps some department of government do the advising and initiating, rather than try to make the board sit on both sides of the fence at once? It does not seem to me as though those two functions can be carried out by the one body. The minister may be able to solve that in some way or another. How does he propose to get around that difficulty?

Mr. STIRLING: Has not the board of transport now got those two functions?

Mr. GREEN: No. The board of transport commissioners has far more independence in deciding on applications than this air transport board will have.

Mr. HOWE: I will agree that the board of transport commissioners is an entirely independent body, but

I point out that the duty of the board of transport commissioner is wholly negative.

It initiates nothing. If an application comes before the board, it determines whether the application complies with the Transport Act, or whether it does not.

If such application does comply with the act it is approved; if it does not it is rejected.

I point out that this new board has judicial functions in a similar way.

Mr. GREEN: On the same principles as are set out in the Transport Act?

Mr. HOWE: The hon. member had better wait for the bill to determine that. The principles are set out in the bill. They are varied in some particulars.

The new board also has the function of attempting to build as well as to regulate.

*Civil aviation in the United States, which is more highly developed than in any other country*, has been developed by a board of this type, and, I believe, developed admirably.

I think that by and large the air transport system of the United States is a very successful development, and that its civil aeronautics authority has contributed much toward that fortunate situation.

I believe it is a model which Canada can very well follow.

Mr. GREEN: On the question of international agreement, *now that the British have announced that they cannot follow the Canadian plan*, is the government proceeding on the basis of making bilateral agreements with other nations?

Mr. HOWE: No.

Mr. Agar Rodney Adamson - Progressive Conservative: The minister has paid a high compliment to the United States civil aviation board. I understand there is a radical difference between the policy in the United States and the policy proposed by the minister [...]

1942 to 1945 : Sir Roy Fedden, aeronautical engineer, special adviser to the **minister of aircraft production**, Sir R. Stafford Cripps.

Fedden creates the UK's aeronautical "technical advisory committee" of WW2 with full approval of the Royal Aeronautical Society. Fedden instructed to report back to technical advisory committee of the Royal Aeronautical Society at the end of the war, Fedden sent to North America [with a powerful team] "to seek technology which might help the war effort".

While he was studying "American technical education" an idea first came to him which **had consequences of major importance**.

As a result of Fedden's persuasion,

**minister of aircraft production** [Cripps] creates an inter-departmental committee to **study the higher educational needs of the British aircraft industry**.

Fedden made chairman committee.

October 1944 : inter-departmental committee to **study the higher educational needs of the British aircraft industry**. produces "the Fedden report".

October 1944 : "the Fedden report" recommends the creation of a "postgraduate college of aeronautics",

## Notes on “Civil Aviation”

1946 : postgraduate college of aeronautics created at Cranfield. Fedden sits on the board of governors until 1969.

Cranfield college developed first as “primarily an aviation establishment”.

late 1950s a [College?] policy of diversification begins.

1. College of aeronautics expands to include [?]
2. Expansion leads to a strong and broad based advanced engineering faculty [ year?]
3. Finally evolves as a “management school” which becomes one of the leaders in its field. [year?]

1969 : “Cranfield college of aeronautics” renamed “the Cranfield Institute of Technology”[by grant of a royal charter]

“Cranfield Institute of Technology - the only wholly postgraduate, post experience, University in the UK” <sup>260</sup>

19 May 1944 : Inaugural meeting of the Society of Licensed Aircraft Engineers (SLAE) <sup>261</sup>

Canada's post-war planning for international civil aviation was influenced by London and Washington <sup>262</sup>.

At the time, Canadian aviation policy was “driven by ambitions” [which were] not easily reconciled” <sup>263</sup>.

- a) Collective - security idealism;
- b) Commercial advantage;
- c) The desire to reconcile British and US policies;
- d) The desire to raise Canada's international profile.

These issues are explained and analysed in

the lead-up to and in the events of the Chicago International Civil Aviation Conference in November–December 1944.

What emerges challenges a considerable part of the conventional wisdom about:

- a) Canadian diplomacy and
- b) the role Canada played at the Chicago Conference

picture of the powerful motives of the day - and the stage upon which the “civil-aviation drama” is played out.

11 June 1944: Canadian Pacific Railway owns more than 40 air operations. Concerned that this private railway company had been allowed to purchase such a large share of Canadian domestic air services, C.D Howe expresses his opinion of the “Board of Transport Commissioners” in the House of Commons and at their poor performance in approving of such purchases and allowing this monopoly to occur:

“The Board of Transport Commissioners is bound by the Transport Act and is concerned chiefly with railway problems”.

The effect of the administration of the Board was this:

In 1938, when the Act was passed, there were a great number of independent air operations in this country.

Four years later, there was only one independent air operation.

Every other [meaning all other] air operation in the Dominion is [now] owned and operated by the railway companies.”

### 14 June 1944 :

C.D Howe addresses the “Canadian Manufacturers association” re wartime industrial initiatives for post-war growth. Howe uses jet propulsion as an example: “the gas turbine promises to become the “Prime-Mover, ranking in importance with the steam engine and present day Internal Combustion engine””

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<sup>260</sup> Fedden was concerned with Cranfield from its first day to the end of his life. He supported it, he worked for it, he criticized it, he loved it. It was the embodiment of his vision.’ [Robin Higham in ODBN]. Bookseller Inventory # 24845

<sup>261</sup> Society of Licensed Aircraft Engineers (SLAE) - The Aeroplane May 1944

<sup>262</sup> The International History Review Journal, Volume 34, 2012 - Issue 4 Canadian Civil Aviation 1935–45: Flying Between the United States and Great Britain : Alan Dobson Pages 655-677 | Published online: 02 Jul 2012 <http://dx.doi.org/10.1080/07075332.2012.690190>

<sup>263</sup> The International History Review Journal, Volume 34, 2012 - Issue 4 Canadian Civil Aviation 1935–45: Flying Between the United States and Great Britain : Alan Dobson Pages 655-677 | Published online: 02 Jul 2012 <http://dx.doi.org/10.1080/07075332.2012.690190>



## Notes on "Civil Aviation"

### 11 September 1944 :

The Canadian *Transport Act* is amended to provide for "*the removal of commercial air services from the jurisdiction of the Board of Transport Commissioners*".

### 11 September 1944 :

The Canadian *Aeronautics Act* creates a new "Air Transport Board" (ATB) to provide "licensing and regulatory functions".

In the House of Commons, CD Howe explains "the new *Aeronautics Act*":

- I. A much more scientific method,
- II. a fairer method,
- III. a method more in keeping with the supremacy of Parliament is being adopted."

The role of the Air Transport Board is clearly laid out in the Act:

- I. An "administrative body, subject to close ministerial control".
- II. Could issue licences and regulations, but only subject to the approval of the Minister of Transport.
- III. Responsible for recommending policy changes to the Minister.
- IV. Advise the Department of Transport in matters pertaining to:
  - I. civil aviation subject to the approval of the Minister of Transport, and
  - II. to license all commercial transports, subject to the approval of the Minister of Transport.

In effect, the new Air Transport Board has none of the independence of the former Board of Transport Commissioners.

### 27 September 1944 :

CWC meets, has letter from IAM lodge 712 - re employment opportunities post War. CWC agrees with IAM.

### October 1944 :

B.C.A.T.P. recruiting ceases. Men already in training continued their courses and on graduation were placed on the air force reserve and allowed to return to civilian life, subject to recall. not all training schools were closed, for a limited number were retained to train additional air crew for the Royal Air Force on a contract basis. A "shadow training scheme" is retained in a state of readiness to provide for any emergency. Certain operational training units were also retained chiefly for Canadian requirements. These were carried on as R.C.A.F. commitments after the end of March, 1945.

### 9 to 19 October 1944 :

Moscow Conference<sup>264</sup> Moscow, Soviet Russia. Meeting regarding decisions to be made on:

1. Russia's entry in the war against Japan;
2. post-war division of the Balkans;
3. the future of Poland.

In attendance:

- a) British Prime Minister Winston Churchill, incl. adviser Anthony Eden
- b) Soviet leader Joseph Stalin, incl. adviser Molotov;
- c) US ambassadors and military officials.

1944 : Allied Air Transport Command employs 400,000 people, operates 3,000 aeroplanes. 600 million miles flown to date.<sup>265</sup>

### 01 November 1944 :

International aviation conference held in Chicago, Illinois, USA **400 delegates** from Fifty-four nations (States) attend. **about 90 delegates were (serving) military officers.**

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<sup>264</sup> <http://www.bbc.co.uk/history/ww2peopleswar/timeline/factfiles/nonflash/a1144874.shtml>

<sup>265</sup> AN HISTORICAL SURVEY OF INTERNATIONAL AIR LAW SINCE 1944 - Peter H. Sand, James T. Lyon, Geoffrey N. Pratt, McGill University

## Notes on "Civil Aviation"

Proposals from 4 principle nations were submitted for forming the "Private air law" structure of a post war "International Organisation" with "Global Oversight" of Civil Aviation:

1. The United States proposals:
  - a) international body with **executive functions in the technical field**, but
  - b) international body with **advisory functions in the economic field**.
2. The United Kingdom proposals :
  - a) power to fix routes,
  - b) power to fix frequencies (route schedules), and
  - c) power to fix rates (airfare prices).
3. The Canadian proposals :
  - a) power to issue permits for international air transport operators.
4. The Australia-New Zealand proposals :
  - a) international ownership and operation of all international air services (rejected)

22 November 1944 : Ottawa Canada : Orders in Council: The Civilian Government Employees (War) Compensation Order  
P.C. 45/8848 <sup>266</sup>

Certified to be a true copy of a minute of a Meeting of the Treasury Board, approved  
by His Excellency the Governor General in Council, on the 22nd November, 1944-  
The Board had under consideration a memorandum from; the Honourable the  
Minister of Finance reporting:

—  
"That by Order in Council P.C. 311/6181 dated August 4, 1943, made under the  
War Measures Act, provision was made for the payment of benefits to and in respect  
of civilian employees of the Government of Canada who, having been sent out of Canada in the clourse of duty, suffer disability or  
death due to enemy action or  
counter action against the enemy;

That by Order in Council P.C. 2187 dated October 20, 1922, amended by Order in Council P.C. 1165 dated June 15, 1927, and  
made under Section 6A of the Air Board Ajct (now Section 7 of the Aeronautics Act, R.S.C. 1927, Chapter 3) provision was  
made for compensation for death or injury to public servants as a direct result of a flight taken in the course of duty;  
That, reference to said Order in Council P.C. 2187 discloses that it was made 'primarily and perhaps entirely for the protection of  
aerial observers, and that it did not anticipate coverage of civil servants who would fly on commercial passenger  
planes;

That the rates of compensation provided by said Order in Council P.C. 2187 are based upon salary of the employee and are  
designed to parallel' the ratio between income and compensation of members of the Forces provided in the schedules to the  
Pension Act up to and including the rank of Major;

That because of the generality of the provisions of said Order in Council P.C. 2187, and because of the changed conditions since  
1922 arising not only out of the war but also out of the establishment of aeroplane passenger services and the cheapness of  
protective insurance coverage upon flights in such passenger planes, the said Order in Council has caused difficulties in the matter  
of creating any comprehensive scheme of pension rights for civilian employees in the matter of accidents in the course of  
duty arising out of war eonditionis;

That because the said Order in Council P.C. 2187 was intended for the protection of certain salaried classes of civilian employees  
the schedule of rates therein is not deemed adequate to compensate civilian employees in the higher salary categories,  
and: therefore, notwithstanding the generality of its terms, it is not suitable as a general provision to cover accident during flights;  
That the necessity for some comprehensive pension scheme for civilian employees undertaking risks in flight by bomber plane and  
other non commercial planes (apart from the hazards of enemy action or counter action) has become increasingly  
apparent;

That the whole subject of pension and compensation rights of civilian employees arising out of accidents due to conditions brought  
about by the war has been under review by the Pensions Advisory Committee, which Committee has recommended inter alia: (a)

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<sup>266</sup> ORDERS in COUNCIL pg 371-375 CANADIAN

## WAR ORDERS AND

REGULATIONS - 1944,

VOLUME IV No. 8, NOVEMBER 27, 1944 - STATUTORY ORDERS AND REGULATIONS DIVISION PRIVY COUNCIL OFFICE  
OTTAWA - EDMOND CLOUTIER, PRINTER TO THE KING'S MOST EXCELLENT MAJESTY - 1944

## Notes on "Civil Aviation"

That Order in Council P.C. 311/6181 of August 4, 1943, be amended to include coverage of death or disability suffered by the employee as a direct result of an air flight either within or outside of Canada undertaken in the course of duty arising out of the war but not including an injury resulting from a flight by commercial air line plane in a scheduled flight, and also as a direct result of a flight either within or outside of Canada undertaken in the course of duties not arising out of the war made in other than a commercial air line plane provided such mode of travel was necessitated by war conditions.

(b) That the rates (of pension in said Order in Council P.C. 311/6181 be amended and increased so that the same shall be placed upon an equality in all respects with the scale of pensions provided for members of the Forces under the Pension Act.

(c) That the said Order in Council P.C. 2187 of October 20, 1922, be amended to exclude from its provisions flights made on commercial passenger planes, and also to revise the scale of pensions thereunder to the levels of the Pension Act.

The undersigned, concurring in the recommendations of the Pensions Advisory Committee, has the honour to recommend pursuant to paragraphs (a) and (b) of the said recommendations, and under authority of the War Measures Act that Order in Council P.C. 311/6181 be rescinded and that the following regulations be made and established in substitution thereof:

### ORDER

1. This Order may be cited as the Civilian Government Employees (War) Compensation Order.

2. For the purposes of this Order and any regulations made thereunder, the following expressions shall, unless a contrary intention appears, have the meanings stated below:

(a) 'employee' means any person engaged as a permanent or temporary civilian employee of the Government of Canada and includes any person serving as such with or without remuneration, but not including a person engaged locally in any place outside of Canada.

(b) 'Commission' means the Canadian Pension Commission.

(c) 'Department' means the Department of Veterans' Affairs.

(d) 'salaried employee' means any employee paid a regular periodical salary or wage, including an employee in respect of whose services, provided directly to the Government of Canada, the Government of Canada reimburses to his employer such salary or wage.

(e) 'war injury' means any physical injury which, during the war with Germany and Germany's allies, as a direct result of enemy action or counter action taken against the enemy, has been sustained by an employee who is out of Canada having been sent from Canada to perform duties for or on behalf of the Government of Canada.

(f) 'war flight injury' means any physical injury which, during the war with Germany and Germany's allies, has been sustained by an employee as a direct result of an air flight either within or outside of Canada, undertaken

(i) in the course of duties arising out of the said war, but not including an injury resulting from a flight made in a commercial air line plane on a scheduled trip;

(ii) in the course of duties not arising out of the said war, when the injury results from a flight made in other than a commercial air line plane on a scheduled trip, provided such mode of travel was necessitated by conditions arising out of the said war.

(g) 'commercial air line plane on a scheduled trip' shall exclude a plane in the Canadian Government Trans-Atlantic Air Service.

3. Otherwise than as provided by paragraph 9, this Order shall be administered by the Canadian Pension Commission and all the provisions of the Pension Act which are not inconsistent with the provisions of this Order, or any regulations made thereunder, shall apply to every claim for pension made under this Order, and every such claim shall be dealt with and adjudicated upon as if such claim were a claim under the Pension Act and as if the employee were a member of the Forces at the time of incurring the war injury or war flight injury.

4. Any salaried employee who sustains a war injury or war flight injury may be granted special leave with pay for such period of time as may be certified as necessary by a qualified medical practitioner and approved by the Commission, but not exceeding a total of 180 days.

5. Subject to the provisions of these regulations pensions shall be awarded in accordance with the rates set forth in schedules 'A' and 'B' of the Pension Act, to or in respect of any employee who suffers disability or death as a direct result of a war injury or a war flight injury, according to the salary range set opposite the military ranks shown in the following table:

Salary Range Military Rank  
\$3,000.00 or less • Lieutenant

## Notes on "Civil Aviation"

\$3,001.00 to \$3,750.00 .Captain

\$3,751.00 to \$5,000.00' Major

\$5,001.00 to \$6,500.00 Lieutenant Colonel

\$6,501.00 to \$8,000.00 /Colonel

\$8,001.00 or over Brigadier

6. In respect of an employee serving without remuneration or of a part time employee, (a) rating shall be made of salary status for the purposes of the Table in paragraph 5 hereof according to the salary that would be paid a permanent full time civil servant for the nature of the duties performed, and

(6) such rating shall be made in the first instance by the Deputy Minister of the Department concerned who shall, whenever possible, certify in writing such rating to the Commission before such employee becomes exposed to risk of war injury or war flight injury, and

(c) if the Commission makes 'any change in such rating adversely to the applicant for pension, an appeal on the part of the applicant for pension from the Commission's decision thereon, shall be to the Treasury Board, whose decision thereupon shall be final.

7. In the case of an employee who is a salaried employee, and who qualified for benefits under Section 4 hereof, payment of pension in respect of disability shall not commence until the date following completion of the initial period of treatment, or 180 days after the incurrence of the injury, whichever is the earlier date.

8. All benefits under this Order shall be in addition to any benefits to which the employees or their dependents may be entitled under the provisions of the Civil Service Act or the Civil Service Superannuation Act, but shall be subject to deduction of any other compensation receivable on account of the war injury or war flight injury from any source to which the employee has .made no direct contribution.

9. (1) The Department may examine, give treatment to and admit to hospital an employee who, in the opinion of the Department, is suffering from a war injury or war flight injury, provided that if the Commission renders a decision that the disability is not attributable to a war injury or war flight injury, treatment and hospital care shall not be continued at the expense of the Department longer than seven days after issue of notification by the Commission of such decision.

(2) The Department may examine, re-examine, give treatment to. admit to hospital and re-admit to hospital an employee who, in the opinion of the Department, is in need of such services in respect of a disability which at any time previously thereto has been determined to be attributable to a war injury or war flight injury.

10. The Commission may make regulations not . inconsistent with this Order for the purpose of carrying the Order into effect. Such regulations may (without prejudice to the generality of the foregoing) make provisions for prescribing:

—  
(a) the person by whom and the form and manner in which applications may be made, and

(6) the records, documents, or other information which must be furnished to the Commission in connection with any application.

11. Pensions granted under authority of Order in Council PC. 196/4417 of June 18, 1941, or Order in Council P.C. 311/6181 of August 4, 1943, may be increased in accordance with the new schedule of rates established herein effective as from the date hereof.

12. All payments required to be made under this Order shall be out of f&nds provided from the War Appropriation.

"

The Board concur in the above report and recommendation, and submit the same for favourable consideration.

A.D.P. HEENEY

Clerk of the Privy Council.

### 07 December 1944 :

Chicago international aviation conference final agreement [in English only], a joint plan incorporating other States proposals. A compromise with deficiencies adopted and signed by all except Liberia.

"Private Law" differs from "Public Law", the new "ICAO" is a management executive of private companies" a NON Governmental Organisation (NGO).

## Notes on "Civil Aviation"

The ICAO headquarters in Canada and then seeks a Canadian "Companies License" at the "Federal" level in order to operate "across Canada".

Obtaining a "Canadian License" meant that ICAO was now "legally recognised" to operate as a business in Canada, but as a "Private Entity", it is NOT granted or endowed with National Legislative decision making powers. To do so would subvert and undermine Parliament.

Once a Canadian "License" to operate is obtained, the Montreal based ICAO petitions the United Nations with a request to be recognised as "The only International Body with rule and decision making powers for it's international members" and as such should be recognised by the UN as an "Authority in international Civil Aviation matters"..

The UN grants the ICAO application and International Aeronautics oversight now comes from a "Corporation controlled private entity" [run mainly by pilots and big business] masquerading as a "International Decision Making Authority". Big business has taken control of international political decision making...

ICAO is

1. a NGO with NO "National" rule or policy making authority.
2. a Business Entity that has placed itself above the control of National Legislation making bodies - does it have the "Legal Right" to make decisions on airworthiness that affect aviation at a national level ?

21 December 1944 : Orders in Council : Aircraft Control Regulations amended — office of deputy Aircraft Controller - ORDER IN COUNCIL # 9491

NOTE : Air Force Act PC # 7524

R.C.A.F. (Air Force Act Amendment) Order No. 1, 1943, (National Defence for Air) amended 28/9/44. " PC. 7524

AT THE GOVERNMENT HOUSE AT OTTAWA

Thursday, the 28th day of September, 1944.

present :

His Excellency

The Governor General in Council:

Whereas "The Royal Canadian Air Force (Air Force Act Amendment) Order No. 1, 1943", (Order in Council P.C. 6190 of August 26, 1943 as amended by Order in Council P.C. 9379 dated 7th December, 1943), effected certain modifications, adaptations and exceptions to the Air Force Act in force in the United Kingdom on the 1st day of May, 1943, for the purposes of their application to the Royal Canadian Air Force, under Section 11 of The Royal Canadian Air Force Act; And whereas the Minister of National Defence for Air reports that, in the adaptation of Section 44 of the Air Force Act to the Royal Canadian Air Force, it is desirable to introduce in the scale of punishments that may be awarded by courts-martial to officers the punishment of "reduction to a lower commissioned rank in the air force" thereby bridging the gap between the punishment of "dismissal from His Majesty's Service" and the next lower punishment of "forfeiture of seniority of rank";

That, in the adaptation of the said Section 44, it is desirable to introduce in the scale of punishments that may be awarded by courts-martial to airmen the punishment of "discharge from His Majesty's service", thereby bridging the gap between the punishment of "discharge with ignominy from His Majesty's service" and the next lower punishment of "reduction to the ranks"; That further minor adaptations are required to be made to the said Section 44 in its application to the Royal Canadian Air Force; and

That it is desirable to effect the foregoing amendments or adaptations to the Air Force Act in its application to the Royal Canadian Air Force by further amending "The Royal Canadian Air Force (Air Force Act Amendment) Order No. 1, 1943".

Therefore, His Excellency the Governor General in Council, on the recommendation of the Minister of National Defence for Air, and under and by virtue of the War Measures Act, Chapter 206, Revised Statutes of Canada, 1927, and notwithstanding any Act, law, regulation or prerogative of the Crown to the contrary, is pleased to order, and it is hereby ordered as follows

:

1. The modifications and adaptations made to Section 44 of the Air Force Act by "The Royal Canadian Air Force (Air, Force Act Amendment) Order No. 1, 1943" (as amended) set out in the second column of the Table- thereto (opposite Item

## Notes on "Civil Aviation"

(10)), are hereby revoked, and the modifications and adaptations to the said Section 44 of the Air Force Act in the second column of the Table to this Order (opposite Item (10)) are substituted therefor.

2. "The Royal Canadian Air Force (Air Force Act Amendment) Order No. 1, 1943" is hereby further amended accordingly, as of and from the date hereof.

A. D. P. HEENEY,

Clerk of the Privy Council. Pg 7 of the Orders in Council report 1944.

### CANADIAN AVIATION - 1945

#### 31 March 1945 :

BCATP officially terminated. Between 1939 to 1945 the BCATP graduated 131,553 "air" crew.

72,835 (more than 55%) of the graduates were R.C.A.F. "Air Crew" personnel

42,097 (32%) of the graduates were Royal Air Force "Air Crew" personnel

The remaining 13 % of the graduates were Royal Australian Air Force and Royal New Zealand Air Force "Air Crew" personnel. The BCATP was credited for being a major contributing factor to winning "air superiority" in Europe and provided "Air Crew" personnel in the following ratios.

- I. 49,707 pilots (38%)
- II. 29,963 navigators (23%)
- III. 15,673 Bombardiers (12%)
- IV. 18,696 wireless operators
- V. 15,700 air gunners (wireless operator /air gunners combined = 25.5%)
- VI. 1913 "flight engineers" (1.5%)

798 men and women of the combined "Commonwealth Air Forces" are reported "missing" in Canada and the "adjacent lands and waters" between 1939 and 1945. They have have never been found and have no known graves.

The BCATP was credited for being a major contributing factor to winning "air superiority" in Europe.

1945 : Uniformed RCAF personnel and retirees "transfer" to the Department of Transport. (Transport Canada remains a favourite "retirement destination" of former Canadian Armed Forces members)

1939 - 1943 : Canadians manned flying squadrons overseas during WW2 - but "ground crew" utilised by "Canadian Squadrons" was comprised almost entirely riggers, fitters and Technical Officers (NCO's and Commissioned Officers) educated, developed and supplied by the R.A.F.'s apprentice and Technical training program. of 1920-1939. This utilisation of RAF technical "Ground Crew" continued until 1943.

#### April 1945 :

White paper by C.D Howe on "Employment and Income".

1. A "Canadian Government policy" aimed at ensuring full employment for the returning veterans.
  1. Was this Policy mainly directed at Air Crew (Pilots) ?? or did it encompass "ALL" Crew, Air and Ground ?
2. Howe 's policy ensured the driving force for post-war activity in military (and Civil?) aircraft development and design came from the RCAF
3. This "new Federal policy" is similar / identical to pre-war British policy whereby the Air Ministry either drove or stifled aircraft development.

16 to 19 April 1945 : 57 members of Forty-one airlines (mostly Europe and North America) from 31 countries meet in Havana, Cuba for the International Air Transport Operators Conference and found the "new IATA" the "*International Air Transport Association*". It is the successor to the International Air Traffic Association, founded in 1919<sup>267</sup>.

The members of the Havana Conference unanimously elect the President of Trans-Canada Air Lines, Mr. H.J. Symington, as the first President of the Association and decide that the first annual meeting will be held at the Windsor Hotel in Montreal in October 1945.

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<sup>267</sup> [http://www.icao.int/secretariat/PostalHistory/iata\\_international\\_air\\_transport\\_association.htm](http://www.icao.int/secretariat/PostalHistory/iata_international_air_transport_association.htm)

Article II of the IATA 1945 Statutes states that "The Head Office of this Association shall be maintained in the city in which the headquarters of the International Civil Aviation Organization is located."

The new *International Air Transport Association* functions:

- A. economic regulator of international air transport, concerning rates and service conditions.
- B. establish uniform air transport documents
- C. establish "general conditions" for contracts of air carriage, in accordance with the interests of the carriers.

Additional functions include the exchange of information on accidents, operating practices, and airline cooperation with ICAO.

Regional Traffic Conferences fix the international air rates by unanimous resolutions.

The new *International Air Transport Association* is headquartered in Montreal, and is subsequently incorporated in Montreal by an Act of the Canadian Parliament<sup>268</sup>, not as a corporation under Canadian law, but as "a **corporation** to which Canadian law attributes an **international nature**".

The *International Air Transport Association* has 4 Standing Committees:

1. Financial,
2. Legal,
3. Technical, and
4. Traffic

The *International Air Transport Association* also has:

- I. a Clearing House in London,
- II. an Enforcement Office in New York, and
- III. 3 Regional Offices in
  - 1) New York,
  - 2) Paris, and
  - 3) Singapore.

IATA contributes to various ICAO Technical Panels.

Cooperation between ICAO and IATA is vital in drafting standards and practices for civil aviation.

IATA's Legal Committee maintains close links with ICAO, presenting the airline industry's views on international conventions.

To ensure that cooperation between IATA and ICAO is simple and effective, they work closely together to further the development of international civil aviation, both Organisations have been located in the same city from their inception in 1945.

May 1945 : Sir Archibald Sinclair ceases to be Secretary of State for Air

**06 June 1945 :**

"Provisional" International Civil Aviation Organization (P.I.C.A.O.) - representing the various national governments - convention comes into effect.

The signatory States to P.I.C.A.O. undertake to collaborate in international measures to secure the uniformity of:

- I. aviation regulations,
- II. aviation standards,
- III. aviation procedures, and
- IV. aviation organization.

The conference - **driven by the USA ?** - revolves around the following:

- I. The Paris Convention of 1919 contained "technical rules" for air navigation.
- II. Pre WW2, international air law was mainly the prerogative of the European States
- III. The Chicago Convention does not contain "technical rules for air navigation".



<sup>268</sup> 20th Parl., 9 George VI, 1st session 1945; Royal Assent received December 18, 1945; IATA Bulletin, No. 2 (1945), Annex 3, p. 15.



## Notes on "Civil Aviation"

The new "technical rules for air navigation" are laid out in the ICAO "Technical Annexes". Not requiring ratification by signature, the ICAO "Technical Annexes" are generally considered as "simple recommendations without binding force".

### 06 July 1945 :

What was initially known as Operation Overcast begins in Europe. Operation Overcast moved captured Austrian and German scientists, engineers, technicians and their equipment to the United States. Months later the US War Department began an intra-office code of tagging the files of their most reprehensible Nazi recruits with paper clips — these Nazis were to be smuggled in, made known to no other US bureaucracies — Operation Overcast thus became known as Operation Paperclip. Wernher von Braun's dossier was never transferred to NARA.

### 1945 to 1950 :

9 different British firms are producing 14 different aircraft types.

### 28 November 1945 :

Memo from United States Ambassador Winant, in the United Kingdom to the US Secretary of State *"The British Govt, however, are in deadly earnest in their insistence on the establishment of some method of controlling rates to prevent subsidy and rate wars. We know that in the last few days the British have made a careful check of the views of nearly all of the European countries on this matter, and they are certain that they will all support the British view on rate control... The Department (US Civil Aeronautics Board and Dept of Commerce) is, of course, aware that France and many of the European countries do not look upon aviation as a business, and unless a "scheme" (Programme) is worked out under which rates cannot be controlled unilaterally by one operator or one country, the probabilities are great that the tourist associations, the hotel keepers and possibly the airline officials who are not under the compulsion of making money but only to enhance the prestige of their country, will reduce rates way below cost if there are no safeguards. ... Railey (Howard B. Railey, American Civil Air Attaché in France) has been here this week and wishes the Board and Department to know that the French position on IATA is the same as the British"*<sup>269</sup>

### 18 December 1945 :

Assent given to a special Act of the Canadian Parliament incorporating IATA : ACT TO INCORPORATE INTERNATIONAL AIR TRANSPORT ASSOCIATION.<sup>270</sup>

### 1945 :

Air Engineer Mr. H. (Rex) Terpening - Manager of the Air Observer School (A.O.S.) at Edmonton, later Maintenance Superintendent of the A.O.S.<sup>271</sup>

### 12 December 1945 :

Air-Commodore Harvey asked the Under-Secretary of State for Air <sup>272</sup>

1. to state the number of engine failures on four-engined aircraft in the R.A.F. since 1st September, 1945
2. if he is satisfied with the standard of maintenance generally.

Mr. Strachey : 255 cases of an engine failure in four-engined aircraft have so far been established for the period from 1st September to 30th November, 1945.

The figure is not yet complete, particularly for commands overseas, as each case of apparent engine failure is investigated, and this necessarily takes time. Both the standards and methods of maintenance throughout the Service are under constant review and we shall always aim to make further improvements in dealing with these technical problems. We are specially watching the maintenance requirements for Transport Command and for the trooping programme.

Wing-Commander R. Robinson asked the Under-Secretary of State for Air to provide:

1. the monthly number of accidents in Transport Command from August to date, giving
2. the number of casualties,
3. the number of fatalities or
4. the number of otherwise, in each case.

Mr. Strachey : Following is the table: (not in the Hansard)

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<sup>269</sup> FOREIGN RELATIONS OF THE UNITED STATES: DIPLOMATIC PAPERS, 1945, THE BRITISH COMMONWEALTH, THE FAR EAST, VOLUME VI - <https://history.state.gov/historicaldocuments/frus1945v06/d120>

<sup>270</sup> Statutes of Canada, 1945, Chap. 51 (Assented to 18th December, 1945) as amended by Statutes of Canada, 1974-75-76, Chap. 111 (Assented to 27th February, 1975).

<sup>271</sup> The Thrill of Flight - TIMELINES OF ALBERTA, CANADA, AND WORLD AVIATION EVENTS - Alberta's Aviation History - Parent / Teacher reference

<sup>272</sup> [http://hansard.millbanksystems.com/written\\_answers/1945/dec/12/engine-failure](http://hansard.millbanksystems.com/written_answers/1945/dec/12/engine-failure)



## Notes on "Civil Aviation"

Flying-Officer Bowden asked the Under secretary of State for Air how long is the period of initial training given to young men joining the R.A.F.; and if he is aware that men are being posted overseas at the age of 18, after only two months' training.

Mr. Strachey The initial training given to airmen on joining the R.A.F. lasts for eight weeks. If we are to fulfil our programme of bringing home men due for release or repatriation on completion of their overseas service, I am afraid we have no alternative but to post some air men overseas at the age of 18 on completion of their initial training.

Colonel J. R. H. Hutchison asked the Minister of Supply and of Aircraft Production <sup>273</sup> how much the crash of the Handley Page Hermes aircraft will delay the production and delivery of large aircraft suitable for British air lines.

Mr. Woodburn I would like to take this opportunity of expressing my sympathy—and I am sure that of the House also—with the relatives and colleagues of the two men who lost their lives in this accident. While some delay in the development of the Hermes aircraft is inevitable, its full extent cannot be known until it is seen whether the accident investigation necessitates changes in design. There are, however, four other types of aircraft suitable for British air lines either already in production or coming into production early in the New Year.

Captain C. Smith asked the Minister of Education <sup>274</sup> whether the method of marking and assessing the final examinations for engineering cadets is the same as that for the Higher National Diploma in engineering; how many assessed subjects there are in the Engineering Cadet Diploma examination and how many assessed subjects are normally taken in the Higher National Diploma; and whether she is satisfied that the two examinations are of approximately the same standard.

Miss Wilkinson The method of marking and assessing the final examination for Engineering Cadets is the same as that for the Higher National Diploma in Engineering. The number of assessed subjects in the final part of the examination for the Cadet Diploma is six, the same as the number normally assessed in the examination for the Higher National Diploma. Four subjects are also assessed at an earlier stage of the course for the Cadet Diploma; in the course for the Higher National Diploma the equivalent stage is examined by the school and is not assessed. I am satisfied that the two examinations are of approximately the same standard. They are both accepted under similar conditions and for the same purposes by the professional engineering institutions.

Sir W. Smithers asked the Parliamentary Secretary to the Ministry of Civil Aviation <sup>275</sup> why he prohibited Pan-American Airways from landing as many aeroplanes as they wish in this country, and from charging what fares they think it.

Mr. Ivor Thomas It is a cardinal feature of the policy of His Majesty's Government in the matter of international air transport that there should be inter-Governmental approval of the capacity to be operated and the fares to be charged on any particular route. Pending the negotiation of a formal bilateral agreement with the United States of America, His Majesty's Government have intimated that they were prepared to allow United States airlines, authorised by the Civil Aeronautics Board to operate to the United Kingdom, to come to this country on an approved number of frequencies and on the understanding that the fares to be charged were approved by His Majesty's Government. The company referred to by the hon. Member declared their intention to operate at a fare which had not been the subject of prior consultation or agreement. An assurance was, therefore, sought that United States air carriers would conform with international practice and not seek to increase their frequencies before they had obtained the necessary permission of the country to which they desired to operate.

### 14 December 1945 :

**Mr. S. Shephard** asked the Undersecretary of State for Air <sup>276</sup> how many non-British aircraft are now in use in R.A.F. Transport Command; and how many British Halifaxes and Lancasters are at present in storage in this country and not in use?

**Mr. Strachey** Just over 1,000 non-British aircraft are now in use in Transport Command. It would be contrary to the present policy to publish figures for our heavy bomber reserves. The operational bombers now in storage will, of course, go to squadrons in due course. Some bombers have been converted to meet the urgent needs of the trooping programme, but they are not really suitable for transport use because they have little room in the fuselage for anything but a bomb load, which takes up much less space than passengers or freight.

**Sir R. Glyn** asked the Under-Secretary of State for Air how many persons have been killed and injured, respectively, whilst flying as passengers or crew of aircraft of the R.A.F. Transport Command during the five weeks ended Sunday, 2nd December; what types of machines have been involved; and what have been the findings of the courts of inquiry in each case of accident.

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<sup>273</sup> [http://hansard.millbanksystems.com/written\\_answers/1945/dec/12/hermes-aircraft-accident](http://hansard.millbanksystems.com/written_answers/1945/dec/12/hermes-aircraft-accident)

<sup>274</sup> [http://hansard.millbanksystems.com/written\\_answers/1945/dec/12/education-engineering-diplomas](http://hansard.millbanksystems.com/written_answers/1945/dec/12/education-engineering-diplomas)

<sup>275</sup> [http://hansard.millbanksystems.com/written\\_answers/1945/dec/12/international-air-transport](http://hansard.millbanksystems.com/written_answers/1945/dec/12/international-air-transport)

<sup>276</sup> [http://hansard.millbanksystems.com/written\\_answers/1945/dec/14/transport-command#S5CV0417Po\\_19451214\\_CWA\\_17](http://hansard.millbanksystems.com/written_answers/1945/dec/14/transport-command#S5CV0417Po_19451214_CWA_17)

## Notes on "Civil Aviation"

**Mr. Strachey** The provisional figures for passenger-carrying flights in Transport Command during this period are the same as those shown for the month of November in the table accompanying my answer of 12th December to the hon. and gallant Member for South Blackpool (Wing-Commander R. Robinson).

The types of aircraft involved in these accidents were as follows:

1. Douglas Dakota
2. Liberator
3. Short Stirling

As I stated in my reply to the hon. Member's Question of 31st October, I am afraid that I cannot give the information asked for in the last part of the Question as it would be contrary to the public interest to disclose the findings of courts of inquiry, which are privileged.

The foreknowledge that they might be published would impose a restraint upon both court and witnesses, whereas it is essential that all concerned should speak freely, and, if need be, criticise fearlessly, without regard to rank or person.

### CANADIAN AVIATION - 1946

#### 19 Jan 1946 :

the Air Council approve Air-Vice-Marshal G.V. Walsh's proposal that the RCAF roundel with a red maple leaf in the centre be used to mark RCAF aircraft in lieu of the standard RAF Roundel.

1946 : Design laid down for a post war Civil "Jet Transport". Comet 1, designed by deHavilland's Ron Bishop, designer of the DH Mosquito, will introduce a new category of passenger aircraft:

1. Cruise altitude to 40,000 ft.
2. Cruise speed 460 mph
3. 1,500 mile range
4. cabin pressure equivalent to 8,000 ft at cruise altitude
5. 20 degree swept wings.
6. Wingspan : 115 ft
7. Maximum Weight : 105,000 lbs
8. Seating for 36 to 44 passengers, 4 abreast
9. wings mounted low for the structure to pass below the pressure cabin,
10. Four DH Ghost 50 engines, each delivering 4,450 lbs thrust.
11. smooth nose with an "unstopped" windscreen.
12. integral wing fuel tanks,
13. power assisted flying controls,
14. cabin pressurisation using engine bleed air, and
15. tricycle undercarriage.

The new jet aircraft's design is subjected to extremely rigorous testing including both pressure and water tank trials

### CANADIAN AVIATION - 1947

1947 : The Royal Aeronautical Society (with which is incorporated the Institution of Aeronautical Engineers).

Founded: 1866.

Offices ; 4, Hamilton Place, W.I.

President : Sir Frederick Handley Page, C.B.E., F.R.Ae.S.

Vice-Presidents : Dr. H. Roxbee Cox, Ph.D., D.I.C., B.Sc., F.R.Ae.S., Sir Oliver Simmonds, M.A., F.R.Ae.S. and N. E. Rowe.

Librarian: Mr. J. E. Hodgson, Hon. F.R.Ae.S.

Secretary : Captain J. Laurence Pretchard, Hon. F.R.Ae.S.

The Royal Aeronautical Society, founded in 1866, is the oldest institution in the World devoted to flying. It exists for the furtherance of the Science of Aeronautics.

*Branches of the Royal Aeronautical Society exist in the following places in England :—*

## Notes on "Civil Aviation"

Belfast, Birmingham, Bristol, Brough, Cambridge, Coventry, Derby, Glasgow, Gloucester and Cheltenham, Hatfield, Isle of Wight, Leicester, Luton, Manchester, Portsmouth, Reading, Rochester, Southampton, Weybridge, Yeovil, and overseas at:

- A. Sydney, Australia ;
- B. Montreal, Canada;**
- C. Ottawa, Canada;**
- D. Capetown, S. Africa;
- E. Wellington, New Zealand.

The Royal Aero Club of the United Kingdom. Founded - 1909.

Offices; 119, Piccadilly, London, W.1.

Affiliated to the Federation Aeronautique Internationale.

President : Lord Brabazon of Tara, M.C., P.G.

Vice-Presidents :

- 1. The Duke of Sutherland, K.T.,
- 2. The Marquess of Londonderry, K.G., P.C., M.V.O.,
- 3. Lord Gorell, C.B.E., M.C.,
- 4. Captain Sir Geoffrey de Havilland, O.B.E.,
- 5. Lt-Col. Sir Francis K. McClean, A.F.C.,
- 6. Sir W. Lindsey Everard, D.L., J.P., and
- 7. Sir Frederick Handley Page, C.B.E. Chairman :

Air Cdre. Whitney Straight, C.B.E., M.C., D.F.C.

Secretary- General : Colonel Rupert Preston, C.B.E.

1947 : The costs of the new airport to be built at Nausori, Fiji - a small airfield used by the Royal New Zealand Air Force during the war - will be borne equally by the governments of New Zealand, Great Britain, Australia and Canada. (Src - Janes' all the worlds aircraft 1947 pg 13b)

1947 : INTERNATIONAL AIRCRAFT MARKING Prefix : "CF-"

1947 : Dominion of Canada - Air Force :

### THE ROYAL CANADIAN AIR FORCE

The Royal Canadian Air Force is administered by the Department of National Defence, Canada, through the Minister of National Defence, who is advised by an Air Council consisting of the following members :

—

#### THE AIR COUNCIL

The Hon. Brooke Claxton, M.P., Minister of Defence. (President of the Air Council).

H. F. Gordon, Deputy Minister of Defence. (Vice-President of the Air Council).

Air Vice-Marshal Robert Leekie, C.B., D.S.O., D.S.C., D.F.C., Chief of the Air Staff.

Air Vice-Marshal N. A. C. McCreath, C.B.E., D.S.C., E.D., Air Member for Air Staff.

Air Vice-Marshal H. L. Campbell, C.B.E., Air Member for Personnel.

Air Vice-Marshal C. R. Slemon, C.B., C.B.E., Air Member for Supply and Organisation.

Air Vice-Marshal A. L. James, C.B.E., Air Member for Research and Development.

#### Special Appointments-

Director of Construction and Engineering : Air Cdre. J. G. Bryans, O.B.E.

Director of Equipment and Supply : Air Cdre. R. A. London, O.B.E.

Director of Accounts and Finance: Air Cdre. J. M. Murray, C.B.E.

Director of Organisation and Appointments : Air Cdre. A. C. Gordon, (J.B.E.

Commandant, R.C.A.F. Staff College : Air Cdre. A. D. Ross, G.C., O.B.E.

Chairman, Officers' Selection Board : Air Cdm. W. A. Orr, O.B.E.

#### ADMINISTRATION

Administration of the Force is exercised by R.C.A.F. Headquarters, Ottawa, through five "Commands"—three "Operational" Commands and two "Air" Commands, as follows :

—

#### OPERATIONAL COMMANDS

- 1. Eastern Air Command, Halifax, Nova Scotia - Air Officer Commanding-in-Chief : Air Vice-Marshal A. L. Morfoo, C.B.E.

## Notes on "Civil Aviation"

2. Western Air Command, Vancouver, British Columbia - Air Officer Commanding : Air Marshal J. L. Plant, C.B.E.
3. North Western Air Command, Edmonton, Alberta - Air Officer Commanding & Air Vice-Marshal T. A. Lawrence, C.B.

### AIR COMMANDS

No. 1 Air Command, Trenton, Ontario. - Air Officer Commanding; Air Marshal E. E. Aliihileton, C.B.E.

No. 2 Air Command, Winnipeg, Manitoba. - Air Officer Commanding ; Air Marshal K. M. Gutlirio, C.B.E.

R.C.A.F Overseas (Headquartered in the United Kingdom) - Air Officer Commanding, Air Marshal G. O. Johnson, C.B., ALC.

### NON-OPERATIONAL COMMANDS

Maintenance Command : Air Officer Commanding ; Air Marshal R. E. Alui'Burm'V, C.B.iL

No. 9 Group (Training). Air Officer Commanding : Air Cdre. J. IL Wrav, O.B.iL, A.F.C.

### ORGANIZATION

The Minister of National Defense has announced that the peace-time strength of the R.C.A.F. is to be established at approximately 81,000 of all ranks.

It will comprise:

- A "Regular Force" of 11,100 - capable of rapid expansion,
- An "Auxiliary Force" of 4,000, and
- A "reserve" force of 10,000 consisting almost entirely of officers and airmen who served during the War and have since returned to civil life.

It is proposed that the present 5 Commands will be reduced to 2, to be based at

1. Trenton, Ont. and
2. Edmonton, Alta.

The Commands at Halifax, Winnipeg and Vancouver are being reduced to Group headquarters.

The "Regular Air Force" will be made up of 8 operational squadrons.

Plans for an "Auxiliary Air Force", now to be incorporated in the organisation of the R.C.A.F. for the first time, provide for an Ultimate maximum of 15 squadrons - to be located at the main centres of population throughout the Dominion.

### NAVAL AVIATION

Director of Canadian Naval Aviation ; Capt. R. IL H. Bidwell, C.B.E., R.C.N.

Deputy Director: Capt. G. A. Hothoram, D.S.O., O.B.E., R.N.

The Canadian Navy is retaining an "Air Section" in its post-war organization.

2 light carriers are being transferred to the Royal Canadian Navy and 4 Royal Navy squadrons were, some time ago, allocated for manning by R.C.N. personnel for ultimate transference to the Royal Canadian Navy for service on these carriers.

Canada's 1st aircraft carrier, HMCS *fl'nrh*», was commissioned in March, 1946 and. Nos. 803 and S25 Squadrons were transferred to R.C.N. control to serve as the *Warno7*'s Air Group.

The two other squadrons earmarked for transfer (Nos. 826 and 888) have been temporarily disbanded in the United Kingdom, but will reform as R.C.N squadrons when the second carrier HMCS. *Magnificent*, is commissioned.

### 1947 : Civil Aviation in Canada

Civil Aviation in Canada is controlled by the Civil Aviation Department of the Department of Transport, Ottawa, Ont.

Controller of Civil Aviation: A. D. McLean.

#### Departments

##### 1. Air Regulations Department.

Superintendent: Mr. S. Graham,

The duties of this department include:

1. Inspection of aircraft
2. Registration of aircraft;
3. certification of aircraft for airworthiness;
4. the examination and licensing of pilots;

## Notes on “Civil Aviation”

5. the examination and licensing of air engineers;
6. supervision of flying clubs;
7. prevention of dangerous flying;
8. inquiries into the cause of aircraft accidents ; and
9. International flying.

10. Airways and Airports Department.

Superintendent of Airways : Mr. R. Dodds.

Chief Airways Construction Engineer : Mr. F. C. Jewett

Chief Illumination Engineer : Mr. H. Ainsworth.

The duties of this department include:

1. the inspection, licensing and registration of airports and seaplane bases ;
2. the construction and maintenance of airports and intermediate aerodromes, which now includes all the principal municipal airports in Canada:
3. assistance to municipalities in the designing and constructing of municipal airports ;
4. the lighting of government airports and air routes ;
5. the development and construction of radio range sites and the erection of radio range stations with the exception of the installation of radio equipment ;
6. the construction of buildings and telephone and power lines ; and
7. the calibration and testing of radio aids to air navigation.

THE AIR TRANSPORT BOARD - Canada

Address : Room 123, No. 3, Temporary Building, Lyon Street, Ottawa.

Members of the Board :

1. Chairman: Mr. R. C. Henry
2. Air Vice-Marshal Alan Ferrier,
3. Mr. J.O. Romeo Vachon.
4. Chief, Aeronautical Engineering - Research : Dr. J. J. Green, M.B.E.,
5. Chief, Economies Division : Mr. J.C. Lessard,
6. Chief, Traffic Division: Mr. A.S. Kirk.
7. Secretary and Legal Adviser : Mr. C.S. Booth.

The Air Transport Board has been *designed not only to perform regulatory duties* with respect to air traffic in Canada *but is also charged with the responsibility on advising* the Government on ways and means of bringing about a rapid and well-planned expansion of transport by air.

The Board will be in a position to give prompt attention to all matters affecting air transport requiring governmental consideration.

The **regulatory duties** of the Board include:

1. the establishment of tariffs and the regulating of rates,
2. examination of the ownership, financial structure, operations, and financial position of air carriers ;
3. the making of recommendations for needed financial assistance; and
4. generally *advising* the Government *on all matters relating to civil aviation and the performance of such other allied duties* for which the attentions of the Board may be directed.

Creation of the Air Transport Board **removes** from the Board of Transport Commissioners ***the regulatory duties*** with respect to air transport which were formerly under their jurisdiction.

The Department of Transport will continue to administer those portions of the Aeronautics Act and The Air Regulations which deal with civil aviation and do not come within the scope of the Air Transport Board.

## Canadian Flying / Aviation ASSOCIATIONS

The Royal Canadian Flying Clubs' Association, formed in R)2i) at Ottawa represents the Federation Aeronautiqao internationale.

The central organization of the Canadian Light Aeroplane .Chib.s. j'abron : lion. President ; J. A. Wilson.

President : 8. R. Bernardo.

Tr<'asun\*r : H. A. Yates.

Secretary-Afanager : \1'. G. Wclstciid. .

Address : ,lemma! Building, Ottawa, Out.

Zone \hce-Presiilents ; .1. W. Hurnplirey (Alai“itiine), A. 8.

## Notes on "Civil Aviation"

Dawes (St. Lawrence), E. G. Srorie (C'entrari. .1. R. Morgan  
(Alid-West). A. J. E. Sumner (Saskatchewan), W. R. Alay  
(.Alberta), W. G. AlcKenzie (Pacific).

The Association is the parent organization of the Canadian flying clubs and is the Canadian representative of the Federation  
Aerodiaatigie Intermitiunal.f (F.A.1.).

Before the war membership comprised twenty-two active flying clubs.

By the end of 1941 the number was approximately 100.

Air Industries and Transport Association of Canada. .

Address : 110, Blackburn Building, Ottawa, Ontario.

Directors:

C. H. Diekins, ALB.E. (President),

P. G. Harratt (Vice-President),

H. C. Cottrell (Hon. Secretary),

A. B. McLaren (Hon Treasurer),

B. IV. N. Deisher, (' , R. ia'uA'eus, D. 8,

C. Ormond, A. L. Gibson, (Irant, AlaeDuiuid. G. h\ l'earce,

C. D. Fairweather. l'lxccut ive Secretary : VV. B. Bnrchall.

National Aeronautical Association of Canada, Inc.

Address: 442, Goufcdoraliou Life Building, IT, thieeu Street East,  
H'oronto.

President : R. W. Richards.

General .Managei' : C. R. Patterson.

Institute of Aircraft Technicians.

President : D. T. Jackson (Department of Transport, Montreal),

Vice-President ; H. V. IVright (Canadian M'right, Ltd.).

Secretary : J. R. Chadburn.

Canadian Air Line Pilots' Association (C.A.L.P.A.). .Affiliated with Air Line Pilots' Association of U.S.A. and British Air  
Line Pilots' Association.

President : Capt. C. L. Skelding (T.C.A.).

Vice-Presidents:

Capt. J. F. Crosby (T.C.A.) and

Capt. C. R. Robinson (C.P.A.L.).

Secretary and Treasurer;

Capt. R. J. Baker (T.C..V.).

The Air Cadet League of Canada. .

Address : 122, Wellington Street, Ottawa, Ont.

President and Executive Chairman:

C. D. Taylor,

Managing Director : G. M. Ross.

Secretary and Treasurer; Mr,s. R. S. Godfrejx

### PUBLICATIONS

Ckmadkm At'iatmi.

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by the Air Cadet League of Canada, Subscription: \$1.00.  
Editor ; Art MacDonald.

Aircraft and Airports. Published montlily from 341, Chnreli  
Street, Toronto, Ont. Editor : Robert J. Burns.

Aviation Review. Published monthly by The Aeronautical Institute of Canada, 31, Willcocks Street, Toronto, Ont.  
Editor : N. W. Kingsland.  
Aircraft and Jets. Published monthly from 222, Front Street  
East, Toronto. Editor : P. T. Sampson.

### FLYING CLUBS

Flying Clubs are in operation at

Halifax, N.S. ;  
St. John, N.B. ;  
Montreal, P.Q. ;  
Ottawa, Ont. ;  
Harrison, Ont. ;  
Barrie, Ont. ;  
Oshawa, Ont.;  
St. Catherines, Out. ;  
Kingston, Ont.;  
Toronto, Ont. ;  
Hamilton, Ont. ;  
Brantford, Ont. ;  
Kitchener, Ont.;  
Windsor, Ont.;  
London, Ont. ;  
Fort William, Ont.;  
Winnipeg, Man. ;  
Brandon, Man. ;  
Virden, Man.;  
Portage la Prairie, Man. ;  
Regina, Sask. ;  
Moose Jaw, Sask. ;  
Saskatoon, Sask. ;  
Melfort, Sask.;  
Calgary, Alta-; ;  
Edmonton, Alta.;  
Vancouver, B.C. ;  
Victoria, B.C. ;  
Prince George, B.C. ;  
New Westminster, B.C. ;  
Penticton, BC ;  
Terrace, B.C. ;  
Chilliwack, B.C. ;  
Powell River, B.C. ;  
Nanaimo, BC

### 1947 - Air - Transport Companies

1. **Canadian Pacific Air Lines, Limited,**  
620, Dominion Square Building, Montreal, Quebec.  
President : Grant W. McConachie.  
Vice-President : W. M. Neal.
2. **Maritime Central Airways, Limited,**  
Charlottetown, Prince Edward Island.  
President : J. K. Curran.

## Notes on "Civil Aviation"

General Manager : C. F. Bruke.

### 3. Trans-Canada Air Lines

Head Office : P.O. Box 2873, McGill Street, Winnipeg, Manitoba.

President : H. J. Symington, C.M.G., K.C.

Equipment:

- A) 11x Lockheed 14,
- B) 14x Lockheed "Lodestar",
- C) 24x Douglas DC-3
- D) 6x Douglas DC-4M to be delivered in 1947.

## 1947 - PROVINCIAL OR OTHER GOVERNMENTAL OPERATIONS

### 1. Ontario Provincial Air Service.

Chief Base : Sault Ste. Marie.

The oldest provincial operator of aircraft. Maintains forest patrols, fire-fighting services, air transportation for provincial government officials.

### 2. Saskatchewan Government Air Service.

Chief Base : Prince Albert, Sask.

Maintains forest patrols and fire-fighting services, also provides transportation for Government officials on business with mines, fishery, hunting, game-trapping, etc. Flying ambulance service in the North.

### 3. Royal Canadian Mounted Police, Aviation Division.

PT.Q. : Rockliffe, Ont.

Responsible for :

- a. air transportation of personnel and supplies,
- b. search and rescue work,
- c. anti-smuggling patrols and
- d. mercy flights.

Also employed on tours covering all R.C.M.P. gasoline and food caches in the North.

Equipment operated:

- a. 1x Noorduyn Norseman,
- b. 1x Grumman Goose
- c. 2x Beechcraft 18S.

Pilots on staff : 7

### 4. Central British Columbia Airways.

Base ; Prince George, B.C.

Commercial company holding a contract with the British Columbia Government for forest patrol and the transportation of personnel and supplies to the scenes of forest fires.

## OTHER OPERATORS

There are many operators which are engaged in non-scheduled flying, charter work, flying instructions, air photographic, etc. Since the end of the war there has been a considerable increase in the number of such undertakings (however an up-to-date and reliable list of these concerns was not available at the time of going to press).

## AIRPORTS

Prior to the war there were 103 licensed airports in the Dominion of Canada.

During the war many of these closed down due to:

- a. curtailment of commercial flying
- b. abandonment of private flying
- c. abandonment of club flying.

By the beginning of 1946 licensed airports numbered 98 and by the end of 1946 this number had increased to 168.

This number does not include emergency landing areas, flight strips and seaplane harbours.

Altogether, there are *nearly 600 locations in the Dominion* which have runways of land or water and can handle air traffic.



## Notes on "Civil Aviation"

1947 : Newfoundland : Aviation Administration of the airport at Gander, Newfoundland is accomplished by the Newfoundland Department of Public Works.

Oversight of the Newfoundland department of Public Works - Civil Aviation Division, rests with the Commissioner for Public Utilities in St. John's, Newfoundland.

Commissioner for Public Utilities ; Hon. Mr. J. S. Neill.

Newfoundland Director of Civil Aviation: Mr. H.A.L. Pattison.

### INTERNATIONAL TRANSPORT COMPANIES

There are no Newfoundland Air Transport undertakings at present.

International Companies operating to or through Newfoundland include the following :-

1. Trans-Canada Airlines.
2. British Overseas Airways Corporation.
3. Pan American World Airways.
4. Transcontinental and Western Air, Inc. (Trans World Airline).
5. American Overseas Airlines.
6. Air France.
7. Svensk Interkontinental Lufttraffik A.B. (S.I.L.A.).
8. Royal Dutch Airlines (K.L.M.). (In Summer only).

### AIRPORT

The Newfoundland Airport (Gander) is the only Airport in Newfoundland licensed for civil use.

Lat. 48°57'N., Long. 54°34'W. 493 ft. above sea level.

Four paved runways with magnetic headings as follow's :

1. 320°- 140° 6,000 ft X 400 ft.,
2. 180°-360° 6,000 ft. X 400 ft.,
3. 090°-270° 6,000 ft. X400 ft.,
4. 230°-000° 4,500 ft. X 600 ft.

The Airport has all facilities. Radio, Meteorological office, Navigational Aids, etc.

The Botwood base used by Pan American Airways, American Export Airlines and British Overseas Airways for their trans-Atlantic flying-boat services became inoperative in **October, 1945** with **the conversion of all trans-Atlantic services from flying-boats to land-planes.**

The Torbay Airport, on the outskirts of St. John's, was built and used by the R.C.A.F during the war.

The land comprising the Torbay Airport has been granted to Canada in fee simple and it is now' being operated as a civil airport by the Canadian Department of Transport. It serves as the St. John's terminal for the Trans-Canada Air Lines' local services.

Other airports include:

1. Harmon Field at Stephenville, a U.S. Army field on territory leased to the U.S. for Atlantic defence and used by U.S.A.A.F. Air Transport Command ;
2. Argentia, a U.S. Navy field leased on similar terms ; and
3. an emergency landing strip at Buchans operated by the Canadian Department of Transport.

British Pacific Commonwealth Airlines, Ltd. Head Office, Sydney, Australia

This company has been established to operate Trans-Pacific and Pacific regional air services under the control of the Australian, New Zealand and United Kingdom Governments.

Lord Knollys, chairman of B.O.A.C., is the U.K. Government representative.

As the result of an air agreement signed by Australia, and Canada, Australia, and Canada (**through designated operators**) will conduct **trans-Pacific service jointly between Vancouver, BC and Sydney, Australia.**

British Commonwealth Pacific Airlines (B.C.P.A) will operate as the "Australian airline" company.

Australian National Airways, interim contractors for B.C.P.A., began flying the route on September 16, 1946.

It is expected that the Canadian company will begin to operate in 1947 with pooling of rights and in parallel in partnership with B.C.P.A.

1947 : Government of Canada : budgetary defence cuts : Canadian Air Force Historian's staff is reduced to two members.

## Notes on "Civil Aviation"

1947 :- THE AVRO 691 LANCASTRIAN.

The Lancastrian is a High-Speed long-range transport conversion of the Lancaster bomber rail details of which were given in The 1946 issue of this Annual.

The first conversions were made in Canada, by Victory Aircraft, Ltd. for Trans-Canada Air Lines and are operated by this company, on behalf of the Canadian Government, on a trans-Atlantic mail and passenger service between Montreal, Canada and Prestwick, UK.

The Canadian Lancastrians are fitted with four 1,280 h.p Packard-built Rolls-Royce "Merlin 28" engines and have accommodation for ten passengers, mail and freight.

Production of the Lancastrian has since been undertaken by A. V. Roe & Co., Ltd. and deliveries have been made to the R.A.F., B.O.A.C. and British South American Airways.

The four main variants of the Lancastrian are designated as follows :

—  
Mk. I. Nine-seat version for B.O.A.C.

Mk. II. Trimotor aircraft for R.A.F. Transport Command.

Mk. III. Thirteen-seat version for British South American Airways.

Mk. IV. Similar aircraft for R.A.F. Transport Command.

Type.—

Four-engined Long-range Mail, Freight and Passenger Transport.

WINGS.—Cantilever or mid-wing monoplane.

Aerofoil section NACA 230 series.

All-metal two-spar structure consisting of constant chord centre-section integral with centre-section of fuselage ; two tapered outer wings and detachable tips.

Leading and trailing edges detachable.

All units are built up individually with all fittings and equipment before assembly.

Spars have extruded top and bottom booms built up to single heavy-gauge web plate.

Pressed aluminium-alloy elongated ribs strengthened by swaged flange stiffness.

Smooth aluminium skin.

Wing chord 10 ft. 0 in. (4.88 m.) ; tip chord 7 ft. 1 in. (2.29 m.) ; aspect ratio 8.92 ; net wing area 1,203 sq. ft. (112 sq. m.) ;

gross wing area 1,297 sq. ft. (120.5 sq. m.).

Balanced metal ailerons on miter winch arc metal covered to hinge, with fabric covering aft.

Controlable trim-tabs in each aileron span 17 ft. 3 in. (3.33 m.).

Aileron area 83.3 sq. ft. (7.94 sq. m.).

Hydraulically-operated all-metal split trailing-edge flaps between ailerons and fuselage in two sections each side.

Flap area 133.3 sq. ft. (12.59 sq. m.).

FUSELAGE.

All-metal structure of oval cross-section in five separate assembled sections.

Fuselage laced with formed by joints of extruded longerons half-way down the three middle sections.

Cross beams between longerons support floor and form roof of bomb-bay (on Lancaster). Vertical U-bolts and ribs bolted to longerons carry the smooth metal skin, remaining sections consist of oval frames and formers, longitudinal stringers and riveted metal skin.

All equipment and fittings installed before final assembly of separate units. Fuselage tail sections formed of smooth metal sheet and replace gun-turrets of Lancaster.

Maximum internal width 5 ft. 3 in. (1.60 m.).

Vertical Unit.—Vertical elevator in one-piece structure with twin longitudinal

rudders mounted as endplates. Two-surface airfoil plane constructed in two main sections and joined on fuselage centre-line. Metal covering over all surfaces except elevator, which are fabric-covered.

Controllable trim-tabs in rudders and elevator.

Tailplane span 33 ft. 9 in. (10.28 m.) ; tailplane and elevator root chord 8 ft. 5 in. (2.39 m.). Gross tailplane area 143.9 sq. ft. (13.35 sq. m.) ;

elevator area 87.3 sq. ft. (8.1 sq. m.) ;

rudder area 41.2 sq. ft. (3.83 sq. m.).

Landing Gear.—Retractable two-wheel type.

## Notes on "Civil Aviation"

Each main wheel 5 ft, 6 in. (1.65 m.) diameter carried between pair of Dowty shockabsorber legs with diagonal cross-bracing and rear bracing struts, and retracts rearwards into inner engine nacelle, being fully enclosed in the retracted position by mechanically-operated twin doors.

Hydraulic-operation. Track 23 ft. 9 in. (7.24 m.). Fixed tailwheel carried in fork on shock-absorber leg.

Power Plant.—Four 1,120 h.p. Rolls-Royce Merlin 24 twelve cylinder liquid-cooled engines with two-speed superchargers mounted on welded steel-tube bearers cantilevered from front wing-spacer. D.H. Hydraulic three-litre constant-speed in-flight feathering airscrews, 13 ft. (4.0 m.) diameter.

Fuel tanks in wing (2,154 Imp. gallons = 5,248 litres) and in bomb-bay (1,020 Imp. gallons = 4,140 litres).

ACCOMMODATION (Nine-passenger version).—

Group of four consisting of pilot (on right) and co-pilot side-by-side with dual controls, with navigator and wireless-operator behind. Crew compartment has volume of 286 cub. ft. (8.1 cub. m.). Aft of crew compartment is crew's toilet room, with volume of 135 cub. ft. (3.8 cub. m.).

Aft of this is galley of 125 cub. ft. (3.6 cub. m.) capacity and seat for steward. Main cabin (capacity 670 cub. ft. = 16.1 cub. m.) follows, and has nine passenger seats on port side facing to starboard.

Gangway on starboard. These seats are convertible into six bunks. Maximum cabin height 6 ft. 4 in. (1.93 m.).

Windows on starboard side only. Main entry door on starboard side with coat-room opposite. Emergency escape hatches in roof, fore the rear of main cabin is toilet compartment with volume of 93 cub. ft. (2.6 cub. m.). Rear luggage hold aft with capacity of 41 cub. ft. (1.2 cub. m.); loading hatch in roof. Forward freight compartment in nose has capacity of 227.6 cub. ft. (6.4 cub. m.); hinged nose-door for loading.

ACCOMMODATION (13-passenger version).—Crew compartment, toilet and freight holds as on 9-passenger version. Crew's toilet reduced to 60 cub. ft. (1.7 cub. m.) capacity, and galley reduced to 85 cub. ft. (2.4 cub. m.). Main cabin of 69.6 cub. ft. (1.96 cub. m.) capacity accommodates thirteen passengers arranged in six seats on starboard and seven on port, with central aisle. All seats face forward except cockpit seats from front, which face aft. Windows on both sides of cabin.

Equipment.—Two dinghies, one in each wing root trailing-edge and (on 9-passenger version) one in coat-room at rear. Oxygen bottle in floor under pilot's cockpit.

Dimensions.—Span 102 ft. (31.1 m.), Length 76 ft. 10 in. (23.4 m.), Height (tail down) 17 ft. 10 in. (5.44 m.).

Weights and Loadings (Nine-passenger version).—Weight empty (fully equipped and furnished) 37,190 lbs. (16,870 kg.), Crew (5) baggage and food 1,100 lbs. (499 kg.), Passengers (9) 1,530 lbs. (694 kg.), Passengers' baggage (9 at 50 lbs. = 27 kg.) 460 lbs. (204 kg.), Mail or freight 210 lbs. (95 kg.), Fuel and oil 24,520 lbs. (11,122 kg.), Weight loaded 65,000 lbs. (29,484 kg.). Maximum landing weight 68,000 lbs. (26,309 kg.). Wing loading 60 lbs./sq. ft. (244.1 kg./sq. m.). Power loading 10 lbs./h.p. (4.63 kg./h.p.). WEIGHTS AND LOADINGS (Thirteen-passenger version).—Weight empty (fully equipped and furnished) 36,190 lbs. (16,416 kg.), Crew (5), baggage and food 1,100 lbs. (499 kg.), Passengers (13) 2,210 lbs. (998 kg.), Passengers' baggage (13 at 50 lbs. = 27 kg.) 660 lbs. (295 kg.), Mail or freight 4,050 lbs. (2,110 kg.), Fuel and oil 17,060 lbs. (7,740 kg.). Normal weight loaded 61,860 lbs. (28,058 kg.), Maximum permissible weight loaded 65,000 lbs. (29,484 kg.), Maximum landing weight 68,000 lbs. (26,309 kg.), Wing loading (at normal load weight) 47.6 lbs./sq. ft. (232.4 kg./sq. m.), Power loading (at normal loaded weight) 9.5 lbs./h.p. (4.3 kg./h.p.). PERFORMANCE (Speeds at 54,000 lbs. = 24,494 kg.).—Maximum level speed 315 m.p.h. (507 km/h.) at 12,000 ft. (3,660 m.), Speed at sea level 255 m.p.h. (459 km/h.). Speed at 3,500 ft. (1,065 m.) 300 m.p.h. (483 km/h.), Maximum weak mixture cruising speed 290 m.p.h. (467 km/h.) at 17,500 ft. (5,335 m.) at sea level 246 m.p.h. (394 km/h.) at 11,000 ft. (3,355 m.) 280 m.p.h. (451 km/h.). Rates

## Notes on "Civil Aviation"

of climb (at 65,000 lbs. = 29,484 kg.). Maximum rate of climb (at maximum climb rate) 970 ft./min. (296 m./min.) at 10,000 ft. (3,050 m.) at sea level, 950 ft./min. (290 m./min.), Maximum rate of climb on three engines, 490 ft./min. (149 m./min.) at sea level ; at 16,000 ft. (4,870 m.) 250 ft./min. (76 m./min.). Ceiling (at maximum climb rate) 25,000 ft. (7,620 m.), Service ceiling 24,300 ft. (7,405 m.), Three-engine ceiling 20,500 ft. (6,250 m.), Three-engine service ceiling 19,000 ft. (5,790 m.), Take-off distance to 50 ft. (16 m.) 1,200 yds. (1,097 m.), Landing run (at 42,000 lbs. — 19,061 kg.) 550 yds. (503 m.).

Range (Nine-passenger version).—(At optimum cruising conditions) 4,100 miles (6,598 km.) at 230 m.p.h. (370 km.h.) at 20,000 ft. (6,095 m.) With 2,190 lbs. (993 kg.) payload , • 3,280 miles (5,278 km.) at 280 m.p.h. (451 km.h.) at 20,000 ft. (6,095 m.) with 4,340 lbs. (1,969 kg.) payload. (At maximum weak mixture cruising conditions) 3,600 miles (5,793 km.) at 280 m.p.h. (451 km.h.) at 20,000 ft. (6,095 m.) with 2,190 lbs. (993 kg.) payload ; 3,200 miles (5,167 km.) at 280 m.p.h. (451 km.h.) at 20,000 ft. (6,095 m.) with 4,870 lbs. (2,209 kg.) payload.

Range (Thirteen-passenger version).—(At optimum cruising conditions) 2,820 miles (4,538 km.) at 230 m.p.h. (370 km.h.) at 20,000 ft. (6,095 m.) with 7,510 lbs. (3,406 kg.) payload ; 2,710 miles (4,361 km.) at 230 m.p.h. (370 km.h.) at 20,000 ft. (6,095 m.) with 10,650 lbs. (4,831 kg.) payload. (At maximum weak mixture cruising conditions) 2,450 miles (3,943 km.) at 280 m.p.h. (451 km.h.) at 20,000 ft. (6,095 m.) with 7,510 lbs. (3,406 kg.) payload; 2,420 miles (3,894 km.) at 280 m.p.h. (451 km.h.) at 20,000 ft. (6,095 m.) with 10,650 lbs. (4,831 kg.) payload.

### THE AVRO NENE-LANCASTRIAN.

An experimental version of the Lancastrian fitted with two Rolls-Royce "Nene" centrifugal-flow turbo-jet units in place of the outboard Merlin engines.

The object of this installation was to obtain performance figures of a jet-propelled air-liner, and generally to investigate the efficiency of the jet engines so installed.

Modification work was completed by Bolls-Boyce Ltd., with the approval of A. V. Roe & Co. Ltd., and the Nene Lancastrian made its first flight at Hucknall in August, 1946.

Alteration to the main spar, ailerons and flaps and the control runs between the inner and outer engines, was necessitated by the jet unit installation.

Extensive experimental equipment is carried, including separate sets of instruments for the Merlin engines and the Nene jet-units.

The Nene Lancastrian has a considerably improved performance over the standard aircraft.

Altitude can be maintained easily on three engines, and *the aircraft was flown satisfactory with both Merlins and one Nene stopped.*

The additional fuel required for the jet-units is accommodated in auxiliary tanks in the fuselage.

The standard wing tanks, three in each wing, are retained.

Two wing tanks then carry kerosene and one wing tank carries petrol.

Total capacity is 2,385 Imp. gallons (10,848 litres) paraffin and 740 Imp. gallons (3,364 litres) petrol.

The weight loaded is 62,670 lbs. (28,381 kg.).

Using only the Nene engines this aircraft has a range of over 800 miles (1,287 km.).

### 04 April 1947 :

ICAO Convention - Chicago comes into force.

The legal status of ICAO in Canada and in the Province of Quebec is questionable : Finally, the "Convention on Privileges and Immunities of Specialized Agencies of the UN" are applied to ICAO's headquarters and staff by the Government of Canada.

ICAO functions now regulatory, judicial, and executive : administrative ( registration by the Council, of bilateral aviation treaties and agreements) technical, and economic matters..

1947 : ICAO (from Janes 1947) THE INTERNATIONAL CIVIL AVIATION ORGANIZATION (I.C.A.O.)  
THE COUNCIL

Headquarters : Dominion Square Buildings, Montreal,  
Canada.

President ; Dr. Edward P. Warner (U.S.A.).

Vice-Presidents ; Dr. F. H. Copes Van Hasselt (Netherlands) ;  
Col. C. Y. Liu (China) ; and G. E. Saurez (Columbia).

Secretary-General : Dr. Albert Roper (France).

Member States : Australia, Belgium, Brazil, Canada, Chile,  
China, Columbia, Czechoslovakia, Egypt, El Salvador, France,  
India, Iraq, Mexico, the Netherlands, Norway, Peru, Turkey,  
United Kingdom, and United States. A seat on the Council  
has been reserved for Russia.

A, Provisional International Civil Aviation Organization  
was established when the Interim Agreement on International  
Civil Aviation came into force on June 6, 1945, after 10 nations  
had announced their formal acceptance of the Agreement.

The Organization was established for an interim period to  
last until a new permanent convention on international civil  
aviation shall have come into force.

The International Civil Aviation Organization, successor to  
the Provisional International Civil Aviation Organization  
(P.I.C.A.O.), came into being on April 4, 1947, following the  
ratification of the Permanent Convention by the required  
number of States.

The Organization consists of an Assembly and a Council.

The Assembly

To meet annually and be convened by the Council. Extraordinary  
meetings of the Assembly may be held at any time

when called by the Council or at the request of any ten member

States. All member States have equal right to be represented

at the meetings of the Assembly and each member is entitled

to one vote. The powers and duties of the Assembly are :

(a) to elect at each meeting its president and officers ; (6) to elect  
the member States to be represented on the Council ; (c) to  
examine and take action upon the reports of the Council ; (d)

to determine its own rules of procedure and establish such  
subsidiary commissions and committees as are needed ; approve

an annual budget and determine the financial arrangements of

the Organization ; (e) to refer any specific matters to the Council  
;

(f) to delegate the necessary powers and authority to the Council  
which are needed for the duties of the organization ; and (g)

to deal with any matters not specifically assigned to the Council.

The Council

The Council to be composed of not more than 21 member  
States elected by the Assembly for a period of two years, adequate  
representation to be given to : (1) those member States of chief  
importance in air transport ; (2) those member States not otherwise  
included which make the largest contribution to the provision  
of facilities for international civil air navigation ; (3) those  
member States not otherwise included whose election will ensure  
that all major geographical areas of the World are represented.

No representative of a member State on the Council may be

## Notes on "Civil Aviation"

actively associated with or financially interested with the operation of an international air service.

The Council shall elect a President, who will have no vote.

One or more vice-presidents to be elected from among the members, who will retain the right to vote when serving as acting president. Decisions of the Council to be deemed valid when approved by a majority of all members. Any member State not a member of the Council may participate in deliberations whenever any decision is to be taken which especially concerns such a member State. But such a State may not vote. In any case in which there is a dispute between one or more member States not members of the Council and one or more member States who are members of the Council, any State within the second category which is party to the dispute shall have no right to vote on that dispute.

The duties and powers of the Council are -

- (1) to discharge the directives of the Assembly.
- (2) to determine its own organization of the Assembly.
- (3) to determine the method of appointment, emoluments and conditions of service of the employees of the organization.
- (4) to appoint a Secretary-General.

(5) to provide for the establishment of any subsidiary working groups which may be considered desirable, including the following interim Committees :

- 
- (a) A Committee on Air Transport.
- (b) A Committee on Air Navigation.
- (c) A Committee on International Convention on Civil Aviation.

(6) to prepare and submit to the Assembly budget estimates of the Organization and statements of accounts of all reports and expenditures.

(7) to enter into agreements with other international bodies when deemed advisable for the maintenance of common service and for common arrangements concerning personnel and, with the approval of the Assembly, enter into such other arrangements as may facilitate the work of the Organization.

In addition, the functions of the Council are to maintain liaison with the member States, calling on them for such data and information as may be required; receive, register and hold open to inspection by member States, all existing contracts and agreements covering routes, services, landing rights, airport facilities, or other international air matters to which any member State or its airlines is a party; supervise and co-ordinate the works of the three Committees, consider their reports and transmit the Committee's reports and the findings of the Council to the member States. In addition, the Council is to make recommendations on technical matters to the member States of the Assembly, submit an annual report to the Assembly and, on the direction of the Assembly, convene another conference on international civil aviation or, at such time as the Convention is ratified, convene the first Assembly under the Convention. When requested by all the parties concerned, the Council will act as an arbitral body on any difference arising among member States relating to international civil aviation matters which may be submitted to it.

The expenses of the Provisional Organisation are borne by

## Notes on "Civil Aviation"

the member States in proportions to be decided by the Assembly and funds are to be advanced by member States to cover the initial expenses of the Organization. Each member State bears the expenses of its own delegation to the Assembly and those of its delegates on the Council and its representatives on committees or subsidiary groups.

Each contracting State undertakes that its international airlines shall file traffic reports, cost statistics and financial states with the Council. Each contracting State may designate the route to be followed within its territory by any international air service, and the airports which any such service may use. If the Council is of the opinion that the airports or other navigation facilities of a contracting State are not reasonably adequate the Council may consult with the State and others affected, to find means of correcting the position and may make recommendations. If requested by the State, the Council may provide all or a portion of the costs needed for the remedies.

A contracting State may at any time discharge any obligation into which it has entered and take over airports and other facilities which the Council has established in its territory by paying to the Council an amount considered reasonable.

The Council may suggest to contracting States that they form joint organizations to operate air services on any routes or in any regions.

The duties of the Committees established under the Council shall be :

—

The Committee on Air Transport : To observe, correlate and continuously report on facts concerning the origin and volume of international air traffic and the relation of such traffic, or the demand for it, to the facilities provided ; collect, analyse and report on subsidies, tariffs and costs of operation ; study matters affecting the organization and operation of international air services, including the international ownership and operation of international trunk lines ; and study and report, with recommendations to the Assembly as soon as practicable on matters on which agreement was not reached at the Chicago International Civil Aviation Conference.

The ICAO Committee on Air Transport :

To observe, correlate and continuously report on facts concerning the origin and volume of international air traffic and the relation of such traffic, or the demand for it, to the facilities provided ; collect, analyse and report on subsidies, tariffs and costs of operation ; study matters affecting the organization and operation of international air services, including the international ownership and operation of international trunk lines ; and study and report, with recommendations to the Assembly as soon as practicable on matters on which agreement was not reached at the Chicago International Civil Aviation Conference.

The Committee on Air Navigation : Study and advise on standards and procedures for communications systems and air navigation aids including rules of the air, traffic control practices, licensing of operating and mechanical personnel, airworthiness, registration and identification of aircraft, meteorological protection of international aeronautics, log books, maps and charts,

## Notes on "Civil Aviation"

airports, customs, accident investigation and so forth. In addition the Committee will work towards the adoption of minimum requirements and standard procedures for all the above and continue the preparation of technical documents in accordance with the recommendations of the Chicago Conference.

1947 : (from Janes 1947) THE INTERNATIONAL AIR TRAFFIC ASSOCIATION (I.A.T.A.)

04 April 1947 :

The "International Convention on Air Navigation" (ICAN) created 13 October 1919 ceases to be in force.

Headquarters : Central Station Building, Montreal, Canada.

Branch Offices : Cairo, Rio de Janeiro and New York.

President : H. J. Symington, C.M.G. (Canada).

President Elect: Hafez Afifi Pasha (Egypt).

Director-General: Sir William Hildred (England).

Executive Committee: John E. Slater (U.S.A.) (Chairman),

J. R. McCrindle (England), Rene Briand (France), Per A. Norlin

(Norway), A. F. T. Cambridge (India), Albert Plesman (Netherlands), J. Benito Ribeiro Dantas (Brazil), Hassan Sadek Pasha

(Egypt), W. Hudson Fysh (Australia), T. H. Shen (China) and

T. B. Wilson (U.S.A.).

Traffic Committee. Chairman: O. A. Rheinstrom (U.S.A.).

Financial Committee. Chairman: G. Temple Mailer (G.B.).

Legal Committee. Chairman : John C. Cooper (U.S.A.).

Technical Committee. Chairman: A. C. Campbell Orde (G.B.)

The International Air Transport Association was formally inaugurated on April 19, 1945, at Havana, following a conference of international airline operators. Invitations to the conference and plans for the new organization were drawn up at a conference held in Chicago in December, 1944, on the initiative of the American Air Transport Association and attended by 34 representatives of 21 nations. The new Association succeeds the original International Air Traffic Association founded in 1919.

Headquarters of the new I.A.T.A. are at Montreal, Canada, and the association consists of a General Assembly, comprising all air transport companies, and an Executive Committee, in which is vested the management of the association. The post of President is an honorary position.

The aims and objects of I.A.T.A. are to promote safe, regular and economical air transport ; to foster the development of air commerce, and to study all problems connected therewith ; to provide efficient machinery for collaboration among all air transport operators who are engaged directly or indirectly in international air transport service ; and to co-operate with the International Civil Aviation Organization (I.C.A.O.) and other international bodies.

There are two categories of membership—Active and Associate. Any air transport undertaking is eligible for active membership if it operates a scheduled air service under proper authority for passengers, mail or cargo, between the territories of two or more States, under the flag of a State eligible for membership in the International Civil Aviation Organization.

The Active Members are :—A.B. Aerotransport (Sweden) :



## Notes on "Civil Aviation"

Aer Lingis Teoranta (Eire) ; Aero Portuguesa (Portugal) ;  
 Air France : All-India (Tata) ; American Airlines, Inc. ;  
 American Overseas Airlines ; Braniff Airways ; British Overseas  
 Airways Corporation ; British West Indian Airways ; Ceskoslovenske  
 Aerolinie ; China National Aviation Corporation  
 ;  
 Cia Mexicana de Aviacion ; Colonial Airlines ; Det Danske  
 Luftfartsselskab ; Det Norske Luftfartsselskap ; Empresa de  
 Viacao Aerea Rio Grandense, Expreso Aereo Inter-Americano ;  
 Indian National Airways ; K.L.M. ; K.N.I.L.M. ; Linen  
 Aeropostal Venezolana ; Lineas Aereas Iberia ; Misr ^ Virwork  
 (Egypt) ; Northeast Airlines ; Northwest Airlines ; Pannii' do  
 Brasil ; Pan American Airways ; Pan American-Jrace Airways ;  
 Polskie Liniie Lotnicze ; Qantas Empire Airways ; Servicos  
 Aereos Cruzeiro do Sul ; Sabena ; South African Airways ;

Svensk Inter-Kontinental Lufttrafik ; Swissair ; d'.A.C.A.  
 (El Salvador) ; Tasman Empire Airways ; Trans-Canada Air  
 Lines ; Trans-continental and Western Air, Inc. ; United Air  
 Lines ; Western Air Lines ; and others),  
 Associate membership may be obtained by any air transport  
 concern operating an authorized service under the  
 flag of a State "eligible for membership in the International  
 Civil Aviation Organization, the Associate Member Companies  
 are :—Aerovias Nacionales de Colombia ; Alaska Airlines ;  
 All-American Aviation ; All-India Airways (Oandor Denver) Ltd. ;  
 Australian National Airways ; Compania Cubana de Aviacion ;  
 Companhia de Transportes Aereos (Portugal) ; Delta Air Lines ;  
 Eastern Airlines ; Linea Aerea Naciona (Chile) ; National  
 Airlines ; Pennsylvania-Central Airlines ; and Portsmouth  
 Aviation, Ltd.

I.A.T.A. has four standing committees : financial, legal,  
 technical and traffic. Each is divided into working committees  
 and sub-committees as necessary.

The Financial Committee concerns itself with all financial  
 matters connected with air transport : standardization of  
 methods of rendering, verifying and settling accounts for revenue  
 transactions as between members: clearinghouse problems

;  
 insurance questions: introduction and control of international  
 air traffic

1  
 monetary instruments. and the twin issues of  
 credit, and statistical matters.

The Legal Committee deals generally with legal matters  
 having a bearing on international air transport. [particularly  
 with international conventions on public and private air law,  
 and on other means of transport : collision, of law and arbitration.

The Technical Committee, ranges over the whole field of  
 international air transport technicalities. It deals with operational  
 matters, the promotion of safety and efficiency in flight, standardization  
 of equipment, the rules of meteorology, maintenance of  
 aircraft, airports and airports of registration.

The Traffic Committee is concerned with all international  
 air traffic matters, involving passenger, cargo and the handling  
 of mail. It studies in particular the principles involved in

## Notes on "Civil Aviation"

fixing tariffs, rates and schedule; general conditions of carriage, traffic forms, conditions and provisions, restrictions and procedures, government, formal regulations and procedures. Methods of administration and public relations, administrative matters [pertaining to] agents,

1947 : (From Janes). FEDERATION AERONAUTIQUE INTERNATIONALE (F.A.I.)

Head Office ; 11, Rue Gauthier, Paris, France.

President : Lord Brabazon of Tara, P.C., M.C.

Associate-Presidents : Jonkheer van den Bergh van Heemstede (Netherlands), General B. J. Kwiecinski (Poland), S. E. Mohamed Taher Pasha (Egypt), The Marquess of Londonderry (Great Britain), Bay Sueru Kocak (Türkey), Colonel W. N. Gerber (Switzerland), G. A. de Ro (Belgium), Baron de la Grange (France).

Secretary-General ; Felix Camerman.

Treasurer-General : E. Blondel La Rougerie.

The Federation Aeronautique Internationale was founded in Paris, in October, 1905. The countries represented at its foundation were Belgium, France, Germany, Great Britain, Italy, Spain Switzerland, and the United States of America. The aim was co-operation between nations concerning aeronautics and with the development of aviation the F.A.I. has become the international representative body of world aviation. The first record to be officially homologated by the F.A.I. was a speed record of 41.29 km.li. (25.0(> m.p.h.) set up on November 12, 1906 by Alberto Santos Dumont. He was timed, over a distance of 220 metres (721 feet), which was as far as he could then fly.

Between the two wars many international arrangements were made under the supervision of the F.A.I. and international rules and sports codes for private flying were drawn up. For example, most of the countries who were represented on the F.A.I. through their accredited national Aero Club, agreed to recognise the Garnet de passage en Douane making private flying between countries easier. Landing facilities and international sport and touring licences were introduced. The F.A.I. also played an important role in the development of gliding and soaring.

All World or International Records must be observed by a representative of a national Aero Club affiliated to the F.A.I. before such a record is "homologated" or approved by the F.A.I.

The F.A.I. sits annually in general conference, but its various commissions sit more often. The last conference was held in London in September, 1946.

The following is the list of national aero clubs which are affiliated to the F.A.I. (correct to December 31, 1946)

-

The Royal Aero Club of the United Kingdom, 119, Piccadilly, London.

Aero Club of South Africa, P.O. Box 3550, Johannesburg, South Africa.

A(M'or Club) Argentine,

## Notes on "Civil Aviation"

Argentina.

Ilodrigucz Pciui, 2-10, Buenos Airo.s,

.Aero Clul) Royale do Bclgifjue, li Boiik\*\-ard tic l'egtMii, Bm.sscls,  
Btdgiuni.

Aero Club do Brasil, 31 rua Ah'aro Ah'i.n. Rio do Jaut'iro, Brazil.

Royal Canadian Flying Clubs Association, 309. Journal Building,  
Ottawa, Canada.

Club Aereo de Chile, Santa Lucia 256, Santiago, Chile.

Club de -Avixicion de Cuba, Edificio Larrea, Havana, Cuba,

Det Kongelige Dan.ske Aeronaitiske Scslskab, Norre Farimng.sgade  
3K, Copenhagen, Denmark.

The Royal Aero Club of Egypt, 26 rue Slierif l'asha, Cairo,

^

Egypt. ^

Federaeion Aeronautica Nacioual de E.sijafia, Calle Mayor No.  
4, Madrid, Spain.

National Aeronautic Association of I7.S..A., 1025, Connecticut  
Avenue, Washington, D.C., U.H..\.

Adro Club de France, 6, Rue (.ialilce. Paris XVlo, Franco.

Flugmalafelag Islands, P.O. Box 234, Reykjavik, Iceland.

Irish Aviation Club, Abbey Biiildiug, Middle ,\bbey Street,  
Dxiblin, Eire.

-Aero Club du Grand Duehe dti Luxembourg, 5, Avenue Alonteray,  
Luxembourg.

Norsk Aero Klubb, Ovre Slottsgate 20, O.slo, Norway.

Koninldijke Nederlandsehe N'crcniging voor Imclitvaart, 3,

Anna. Puulownaplein, Tin\* Magiu\*. Netherlands.

Aero Club <lel Peru, Lima,

Aeroklub PolskieJ, ul. Chaubin,skiego, 4, Warsaw, Poland.

Aero Club de Portugal, -Avenida da Ifilierdud 226, Lisbon,  
Portugal.

Kungl. Sveuska Aerokhibbtm, Malmskilluad.sgatmi 27, Stockholm,  
Sweden.

.Aero Club de Suisse, Hirsdiengraben 22, Zurich, Switzca-land.

Aeroklub Republiky Cezkoslovenske, Sraecky 22, l'rague,  
Czechoslovakia.

Turk Hava Kurumu, Enstitu, Caddesi 1, Ankara, Turkey.

Aero Club Central de L'U.S.S.R., Moscow, Touchino, U.S.S.R.

The A,ssoeiated Australian Aero Club.s liave intimated a desix'o  
to join and will be admitted in 1947.

The folioW'ing -were formerly member.s but are temporarily  
suspended:—

Aero Club di Bulgaria, Sofia, Bulgaria,

Magyar Aero Szovetsc%, Budapest, Hungary.

Aero Club d'Italia, via Cesare Beccaria 35, Rome, Italy.

Aero Clubul Regal al Romaniel, B-dul Lascar Catxirgi 54,  
Bviearest, Rumania,

Suomen Ilmailulitto Flyforlwnd R,A"

Helsinki, Finland.

Marmerlu'imintflx 1 6,

National Aero Clubs, formerly members of the P.A.I., about  
which the Federation has at present no information :

—

Eesti Aeroklubi, Tallinn, Estonia.

Latvijas Aeroklubs, Riga, Latvia.

## Notes on "Civil Aviation"

Lietuvos Aero Klubas, Kaunas, Lithuania. Nasa Krila, Belgrade, Yugoslavia.  
Aero-Club de Grece, Athens, Greece.  
The Aero Clubs of Germany and Japan. are considered to have ceased to exist.

1946 - 1947 Linha Aerea Transcontinental Brasileira - bought six Canadian built Avro "Anson" aircraft from the Canadian War Assets Corp'n (Crown Assets Disposal).

Head Office; Avenida Erasmo Brago 20-A, Rio de Janeiro.

This company was formed in 1944 and plans to establish airlines through the interior of Brazil.

1939-1946 (WW2) - A total of about 9,000 Oxfords were built, 4,411 by Airspeed, Ltd. Other companies contributing to the total were the de Havilland Aircraft Co., Ltd., Percival Aircraft, Ltd. and the Standard Motor Co., Ltd.

The Oxford is used in service Flying Training Schools in the United Kingdom, Canada, Australia, New Zealand, Southern Rhodesia and the Middle East, and it is also employed on light transport and communication duties. A small number was made available under reverse Lend/Lease to the U.S.A.A.F. in Great Britain.

Type.—Twin-engined Advanced Trainer.

Wings.—Cantilever low-wing monoplane. Centre-section built separately from fuselage. Outer sections tapered in chord and thickness and attached to centre-section by four bolts and lockingnuts, one to each spar joint. Bolts pass through tapered high-tensile steel plugs at each end to take shear. Structure consists of two box-spars of spruce and birch three-ply. Former ribs of normal girder type constructed in three sections. Special system of inter-spar bracing consists of built-up diagonal struts. Plywood covering. Metal-framed Handley Page slotted ailerons with fabric covering. Split trailing-edge flaps of duralumin construction in five sections extending under fuselage. Hydraulic operation. Aspect ratio 8.1.5. Gross wing area 348 sq. ft. (32.33 sq. m.). FUSELAGE.—Semi-monocoque wooden structure in two main sections.

Front section is built as a unit and comprises pilot's cockpit and cabin. Rear section with integral fin.

Tail Unit.—Cantilever monoplane type. Wooden framework with wooden covering over tailplane and fin, and fabric-covered elevators and rudder. Balanced rudder hinged to fin only, with hinge-line inclined forward. Controllable trim-tabs in elevators.

Landing Gear.—Retractable two-wheel type. Main wheels each carried between pair of oleo shock-absorber legs which retract backwards into the engine nacelles, leaving a small portion of each wheel exposed. Twin doors enclose logs. Some aircraft have fairing plates in front of legs and wheels. Hydraulic operation. Dunlop low-pressure tyres and pneumatic wheel brakes. Nonretractable Dunlop tail-wheel.

Power Plant.—Two 353 h.p. Armstrong Siddeley Cheetah XV seven-cylinder radial air-cooled engines mounted on welded steel-tube bearers and driving Fairley-Reid two-blade fixed-pitch metal airscrews. Two main fuel tanks in centre-section between spars, and two auxiliary tanks in outer wings interconnected with main tanks. Total capacity 155 Imp. gallons (710 litres). Combined oil tanks and coolers mounted behind engines. Total oil capacity 17 Imp. gallons (77 litres).

Accommodation.—Normal crew of three. Alternative stations for pilot, navigator/second pilot, bomb-aimer, wireless-operator and camera operator. Pilot's cockpit in nose on port, with seat for second pilot/navigator on starboard. Dual controls, second set

## Notes on "Civil Aviation"

removable to provide prone bombing position beside pilot. Bombaiming window in nose. Navigator (when carried) occupies second pilot's seat, which is moved back in line with chart table. Wirelessoperator on seat on rear sjjar facing aft on starboard side.

Equipment.—Eqnijnnt can be installed to enable aircraft to be used for navigational training (including night-flying) ; W/T, D/F and S.B.A. training , • bombing training ; air photography and ab initio twin-engine pilot training (including night-flying and synthetic two-stage amber day/night training). Also available as an ambulance with accommodation for two stretchers.

Dimensions.—Span 53 ft. 4 in. (15.23 m.), Length 34 ft. 6 in. (10.5 m.), Height 11 ft. 1 in. (3.3 m.).

Weights and Loadings.—Weight empty 5,322 lbs. (2,412 kg.), Removable load varies according to function, Weight loaded 7,000 lb.s. (3,150 kg.), Wing loading 21.8 lbs./sq. ft. (106.4 kg./sq. m.), Power loading 10.6 lbs. /h.p. (4.8 kg. /h.p.).

Performance.—Maximum speed 188 m.p.h. (301 km.h.), Stalling speed 64 m.p.h. (103 km.h.). Rate of climb at 6,300 ft. (1,920 m.) 960 ft. /min. (293 in./min.), Climb to 10,000 ft. (3,050 m.) 12 minutes, Service ceiling 19,500 ft. (5,945 m.).

1940-1946 - THE AVRO 634 LINCOLN. The Lincoln, conforming to Specification 14/43, is a four engined heavy bomber which is virtually a sealed-up version of the Lancaster. The Lincoln I and II were in fact known originally as the Lancaster IV and V.

The Lincoln was intended for use in the Pacific Theatre, but appeared just too late to be flown operationally. Various modifications and improvements were incorporated in the design as a result of experience with the Lancaster. The overall dimensions were increased to permit greater loadcarrying abilities and 12.7 in. (320 mm) machine-guns were fitted in all positions. Later versions carry two 20 mm cannon in the dorsal turret.

The Lincoln I is powered by Pratt & Whitney Merlin 58 engines driving Rotol four-blade airscrews, while the Mk. II has Merlin 68 (Packard-built 66) or Merlin 100 (Packard-built 100) engines driving D.H. five-blade airscrews.

The designation Mk. XV was given to the version of the Lincoln I built by Victory Aircraft, Ltd. of Canada (since acquired by A. V. Roe & Co. Ltd.). Six aircraft were built and they were converted to freighters for the Royal Canadian Air Force.

From 1941 until August 15, 1945, 7,711 Mosquitos were built in Great Britain, Canada and Australia, and production has continued in both Great Britain and Australia. In Great Britain 4,300 were built by de Havilland, 917 by Standard Motors, 198 by Percival Aircraft and 12 by Airspeed, Ltd. Canada built 1,032 and Australia 108.

Gloster Meteor - Single-seat Fighter - Tropical and winterisation trials were undertaken during 1945-46 on standard Meteor aircraft at Khartoum, in the Sudan, and at Edmonton, Alberta, Canada. The latter trials were conducted in the winter months under extremely arduous conditions with ground temperatures as low as 30° below Zero.

HAWKER-SIDDELEY AIRCRAFT GO., LTD,  
Registered Office ; 65-66, Pall Mall, London, S.W.1.  
Directors ; T. O. M. Sopwith, C.B.E., F.R.Ae.S. (Chairman),  
Sir Frank Spencer Spriggs, Hon. F.R.Ae.S. (Managing Director),  
H. Biirotighes, F.R.Ae.S., Sir Roy Dobson, C.B.E., F.R.Ae.S.  
and H. A. Meredith, O.B.E.

The Hawker-Siddeley Aircraft Co., Ltd., which was formed  
in 1935, is the controlling organization of Sir W. G. Armstrong  
Whitworth Aircraft, Ltd., Armstrong Siddeley Motors, Ltd.,  
Gloster Aircraft, Ltd., Hawker Aircraft, Ltd., A. V. Roe & Co.,  
Ltd., A. V. Roe (Canada), High Duty Alloys, Ltd. and Air  
Service Training Ltd.

The component companies of the Hawker-Siddeley Group were responsible for providing approximately 30% of all the  
equipment supplied by the British Aircraft Industry to the  
R.A.F. throughout the whole period of the European War.

Total deliveries consisted approximately of 40,089 aircraft,  
inclusive of spares, and 38,664 aero -engines. In addition, the  
Group repaired 11,010 aircraft and 9,777 aero-engines. Aircraft  
production in the group rose from 1,753 in 1938-39 to a peak  
figure of 8,795 in 1943-44, the latter figure not including 2,190  
repaired or re-conditioned aircraft. Engine production rose  
from 2,175 in 1938-39 to 8,008 in 1942-43.

Factory space increased from a floor area of 2,000,000 sq. ft.  
(185,800 sq. m.) in 1938 to 15,000,000 sq. ft. (1,393,500 sq. m.)  
in 1944 and the rate of new aircraft production from 60 to 600  
per month.

PERCIVAL.

PERCIVAL AIRCRAFT, LTD.

Head Office and Works : Luton Airport, Luton,  
Bedfordshire.

Directors : P. L. Hunting (Chairman), Wing Cdr. G. L. Hunting,  
Capt. C. P. Hunting, W. A. Summers, K. D. Morgan, N. R.  
Whiteside and R. R. S. Cook.

Chief Designer : A. A. Bage, A.F.R.Ae.S.

Works Manager : W. E. Salmon.

The Percival Aircraft Company was formed in 1932, It was  
re-organized as Percival Aircraft Ltd. in 1937, and the works  
were moved from Gravesend to Luton. A branch office was  
opened at Toronto, Canada, early in 1946.

A. V. ROE (CANADA), LTD.

Head Office and Works: Malton, near Toronto, Ont.

Chairman : J. P. Bickell.

President : Sir Roy Dobson, K.B.E.

Vice-President and General Manager : Walter N. Deisher.

Assistant to Vice-President : B. S. Sheostone.

In 1945, A. V. Roe & Co., Ltd. of Manchester, England,  
acquired from the Canadian Government the Crown-owned plant  
formerly operated by Victory Aircraft, Ltd., which between  
1942 and 1945 was responsible for the production of the Avro  
Lancaster X bomber. Victory Aircraft also built seven special  
civil versions of the Lancaster (in reality, the prototypes of  
the Avro Lancastrian) for the Canadian Government trans-  
Atlantic air service operated by Trans-Canada Air Lines. Six Avro Lincolns were also completed, by Victory Aircraft in 1945,

and they were subsequently converted to freighters for the E.C.A.F.

A. V. Roe (Canada) Ltd. has also taken over the Government owned Turbo-Research, Ltd., which was formed in August, 1944, and the activities of which are being concentrated at the Malton plant.

The company will continue the development of the turbo-jet engine initiated by Turbo-Research, Ltd. and will also design and build the aircraft in which it will be installed. It is also engaged in the development of a training aircraft to a Canadian Government specification for the R.C.A.F.

All profits earned by A. V. Roe (Canada), Ltd. will be shared with the Canadian Government on a fifty-fifty basis.

Northwest Industries Ltd  
Municipal Airport, PO Box 517, Edmonton Alberta.

Boeing Aircraft of Canada, Ltd.

CANADIAN CAR & FOUNDRY CO., LTD.

H35A.D Office : 621, West Craig Street, Montreal 3, P.Q.

Works ; St. Laurent, P.Q.

President : Victor M. Drury.

Executive Vice-President : William Harty.

Vice-President and General Manager : L. McCoy.

The Canadian Car & Foundry Co. Ltd., the largest manufacturers of railway equipment in the Dominion, entered the Canadian Aircraft Industry by acquiring from the Grumman Aircraft Engineering Corpn., of Bethpage, L.I., N.Y., the licence to construct the Grumman two-seat fighter biplane.

During the late war the Company held, contracts with the Canadian Government for the manufacture and assembly of Avro Ansons and for the overhaul and repair of aircraft of various types, including the maintenance and modification of aircraft of the R.A.F. Transport Command.

The Company also had contracts with the British Ministry of Aircraft Production for the manufacture of the Hawker Hurricane for the R.A.F., and with the Departments of Munitions and Supply for the R.C.A.F. Over 1,400 Hurricanes were built. Spares produced were equivalent to well over another 1,000 aircraft.

Canadian Car & Foundry Co. Ltd. was also awarded a contract to build the Curtiss Helldiver single-engined dive-bomber monoplanes under licence from the Curtiss-Wright Corpn. for the U.S. Navy.

The Company is also exclusively licensed in the Dominion of Canada under the Burnelli patents and has developed the prototype of a twin-engined transport which at the time of writing was undergoing flight trials for its Certificate of Airworthiness.

C.C.F. has recently acquired the principal assets of Noorduyn Aviation, Ltd., and will henceforth manufacture the Norseman

## Notes on "Civil Aviation"

single-engined general purpose aircraft for domestic and export requirements. The current version in production is the Mk. V, an improved version of the Mk. VI which was built by the Noorduynd company during the War for the U.S.A.A.F. as the O-64. The C-64 has since become surplus to military requirements and many aircraft of this type have been sold by the United States in various parts of the World.

### CANADAIR LTD.

Head Office and Works : Cartierville, Montreal, P.Q.

President and General Manager : H. Oliver West.

Chief Engineer : , P. W. Gooch.

Canadair, Ltd., was formed in December, 1944, by the separation of the Aircraft Division of Canadian Vickers, Ltd. from the parent Company and its formation into a new Company to be solely responsible for the manufacture of aircraft. Canadian Vickers, Ltd. will devote its entire facilities in the future to, shipbuilding. In 1947 it was announced that Canadair, Ltd. had been acquired by the Electric Boat Co., of New York, one of the largest builders of submarines in the World, but a company which had not previously engaged in aircraft manufacture. The deal includes the transfer of the Canadian Government's rights in the DC-4 to the new owners.

In the years before the war Canadian Vickers, Ltd. was engaged in the design and development of special types and the adaptation of existing types of aircraft to suit the special requirements of Canada. It made a specialty of winter landing equipment embodying the experience which the long snow period in Canada afforded and float equipment which is essential for summer operations among the lakes and rivers of Northern Canada.

During the war Canadian Vickers undertook extensive contracts in the manufacture of military aircraft for both the Canadian and United States Governments, details of which have been given in previous issues of this Annual.

Canadair, Ltd. is building the Douglas DC-4 and it has been and still is engaged in an extensive C-47—DC-3 conversion programme for airlines in many parts of the World. The Canadair DC-4M is being produced for use by Trans-Canada Airlines. A provisional order of twelve for use by the R.C.A.F. as transports has been cancelled.

#### THE CANADAIR DC-4M.

The DC-4M is a modified version of the standard Douglas DC-4 and conforms to the specified requirements of Trans-Canada Airlines. The major requirement in the T.C.A. specification called for the use of the Rolls-Royce Merlin liquid-cooled engine, with which T.C.A. has had extensive experience on transatlantic service. To meet the Canadian specification the aircraft can be regarded as being 40% re-designed, the major design changes to the standard DC-4 being supplied by the Douglas company.

Designed for trans-ocean and international air traffic, the DC-4M has accommodation for 40 passengers and space for about 4,000 lbs. (1,820 kg.) of mail and freight. The powerplant consists of four Merlin 620 liquid-cooled engines in self-contained power nacelles specially developed by Rolls-Royce, Ltd. for this installation.

The first DC-4M.1, which is not pressurized, first flew on July 20, 1946 and has been delivered to Trans-Canada Airlines for service trials. Five more DC-4M.1's are being built. Later



## Notes on "Civil Aviation"

aircraft, will be pressurized, will have a 5,000 lb. (2,270 kg.) higher take-off weight, and will be known as the DC-4M.2.  
Dimensions.—Span 111 ft. 6 in. (35.8 m.), Length 97 ft. 3 in. (29.7 m.), Height 27 ft. 8 in. (8.4 m.).  
Weight Loaded.—78,000 lbs. (35,412 kg.).  
Performance.—Maximum speed 353 m.p.h. (565 km.h.) at 23,900 ft. (7,290 m.), Maximum cruising speed 32.5 m.p.h. (520 km.h.) at 22,600 ft. (6,890 m.). Most economical cruising speed 240-300 m.p.h. (384-480 km.h.) according to operating conditions. Cruising range 3,500 miles (5,600 km.) at 28,000 ft. (8,540 m.). Service ceiling 36,000 ft. (10,980 m.).

In 1946, Noorduyn Aviation, Ltd. was reconstituted under the name Nuclear Enterprises, Ltd. (P.O. Box 6083, 715, Windsor Street, Montreal, P.Q.) and the manufacture of aircraft and aircraft parts was abandoned. The manufacturing rights for the Noorduyn Norseman were disposed of to the Canadian Car & Foundry Co., Ltd. of Montreal, which company is now in production with the Norseman V

### FEDERAL.

#### FEDERAL AIRCRAFT LTD.

Head Office : 276, James Street West, Montreal, P.Q.

President : W. A. Newman, B.Sc.

Vice-President : A. S. Dawes.

General Manager and Treasurer : A. E. Balcombe.

Secretary and Assistant General Manager : G. H. Montgomery, Jr.

Federal Aircraft, Ltd. was formed in July, 1940, as a wholly owned Government company to supervise the production of the Avro Anson in Canada for use in the Empire Air Training Plan. Eleven Canadian aircraft plants were entrusted with the manufacture and assembly of the major components, Federal Aircraft, Ltd. being responsible for the direction and management of the whole Anson programme.

Under Federal direction a total of 2,882 Ansons was built in Canada; 1,832 Mk. IIs, 1,049 Mk. Vs and one Mk. VI.

These Canadian-built Ansons have been described and illustrated in previous issues of this Annual. The last Canadian-built

Mk. V Anson was completed early in 1945. MacDonald Bros.

Aircraft, Ltd. of Winnipeg has been designated as the continuing contractor for the overhaul and repair of Anson aircraft on behalf of the Royal Canadian Air Force.

Federal Aircraft, Ltd. was formed solely for war purposes and by the time this edition appears the company will probably have surrendered its charter.

### FAIRCHILD,

#### FAIRCHILD AIRCRAFT LTD.

Head Office AND Works : Longueville, P.Q.

President and Managing Director : H. M. Pasmore.

Executive Vice-President : R. B. Irvine.

Vice-Presidents: Howard Murray, O.B.E. and W. Taylor-Bailey. ; .

Secretary : P. Bindoff.

Treasurer: D. H. Sutherland.

Fairchild Aircraft, Ltd., is a direct outgrowth of the aviation activities of the St. Maurice Valley Protection Association which began operations in 1919 and was the first concern to demonstrate that it was practical to use aircraft for commercial purposes in the Dominion. From the St. Maurice Association was formed Fairchild Aerial Surveys of Canada, Ltd., in 1922, and in 1929, Fairchild Aircraft, Ltd., was formed to act solely as a manufacturing and servicing organization.

The factory, built in September, 1930, comprised 38,000 square feet of floor space. Extensions to date now total over 600,000 square feet with machinery and equipment installed valued at approximately \$2,000,000.

The Company, in association with five other Canadian aircraft manufacturers, was awarded a contract by the British Air Ministry for the manufacture of twin-engined Hampden bombers. Certain specific components for the Hampden were built by Fairchild. Manufacture started in June, 1939, and the contract was completed in the early part of 1942.

It has also completed a contract with the Canadian Government for the manufacture of Bristol Bolingbroke twin-engined monoplanes. The Bolingbroke was generally similar to the Bristol Blenheim IV. The landing-gear could be fitted with either wheels, floats or skis. Some were fitted with the Boulton Paul power-operated gun turret for use as trainers for air-gunners..

In addition to the production of the Bolingbroke, the Company built the Curtiss Helldiver for the U.S. Navy under licence from the Curtiss-Wright Aircraft Corporation. The U.S. Navy contract was placed in October, 1942, and the first Fairchild-built Helldiver flew on August 28, 1943. This contract was completed in April, 1945.

With the cancellation of all war contracts in August, 1945, Fairchild Aircraft, Ltd. began the development of a specialised freight-carrying aeroplane suitable for Canadian conditions. This aircraft, the Fairchild Husky, was completed in 1946.

It is described below.

#### THE FAIRCHILD F-11 HUSKY.

The F-11 Husky was designed as a replacement type for the Fairchild 71 and 82 transport monoplanes which were used extensively for bush-flying in Canada and although a float, wheel or ski landing gear can be fitted, it is intended primarily for operation as a seaplane. The prototype F-11, made its first flight from the St. Lawrence River near Montreal in June, 1946. Production was expected to begin in September, 1946, and to reach an ultimate output of one per week early in 1947.

Type.—Single-engined Transport.

WINGS.—Strut-braced, high-wing monoplane. All-metal two-spar structure braced to bottom of fuselage by parallel struts.

—  
Top

surface metal-covered from leading-edge to front spar with fabric covering aft to trailing-edge; bottom surface metal-covered from leading-edge to front spar and from rear spar to trailing-edge, with fabric covering between spars. —Spot-welded leading-edge. Fabric-covered metal ailerons. Slotted trailing-edge flaps between ailerons and fuselage. Aspect ratio 8.45; chord 6 ft. 9 in. (2.74 m.); wing area 355 sq. ft. (32.97 sq. m.).

Fuselage.—All-metal structure of oval cross-section; underside of rear portion swept upwards to provide loading door at rear of

## Notes on "Civil Aviation"

main cabin. Maximum external depth 6 ft. 6 in. (1.98 m.) ; maximum width 6 ft. 2 in. (1.57 m.).

Tail. Unit.—Cantilever monoplane type. Metal structure with metal-covered fixed surfaces and fabric-covered rudder and elevators. Spot-welded leading-edge to fin and tailplane.

Landing Gear.—Twin Edo metal floats carried on N-struts with droop-bar-s and wire-bracing. Alternatively a fixed tricycle landing gear may be fitted, or twin rigidly-mounted skis on pedestalals with the aircraft in tail-up position.

LowBR ITjAnt.—

O

ne 450 h.p. Pratt & Whitney R-9S5-T1B<sub>3</sub> or R-985-

SB3 Wasp-Junior nine-cylinder radial air-cooled engine driving

a two-blade constant-speed metal airscrew. Accommodation.—Pilot's compartment ahead of wing leading-edge

with seats for two side-by-side with dual controls. Access door

3 ft. 9 in. X 2 ft. 1 in. (1.14 m. X 0.61 m.) on each side. Main

cabin 13 ft. long X 5 ft. 1 in. high (3.96 in. x 1.55 m.) has capacity

of 240 cub. ft. (6.70 cub. m.) and can accommodate eight passengers

on folding bench-type side-seats or six or seven passengers on

individual seats. Floor width 4 ft. 1 in. (1.24 m.). Seats removable

so that entire cabin space can be used for freight. Loading door

4 ft. X 3 ft. 4 in. (1.22 m. X 1.02 m.) on each side aft of trailing-edge.

Doors are divided horizontally, lower portion hinging on floor

line and upper portion opening forward. Rear trapezoidal door is

divided vertically and measures 3 ft. 4 in. (1.02 m.) deep and

2 ft. 4 in. (0.72 m.) wide at top and 3 ft. 4 in. (1.02 m.) wide at

bottom. Windows in cabin 12 ins. X 16 in. (30.5 cm. X 40.6

cm.), door windows 14 in. X 18 in. (35.5 cm. X 45.6 cm.). By

using additional space aft two 16 ft. (4.88 m.) or one 15 ft. (5.49 m.)

canoes can be carried.

Dimensions.—Span 54 ft. 9 in. (16.69 m.), Length (over fuselage)

37 ft. 5 in. (11.5 m.). Height (tail up) 17 ft. 9 in. (6.41 m.), Height

(on float dolly) 13 ft. 0 in. (3.96 m.).

Weights and Loadings (Seaplane).—Weight loaded 6,300 lbs. (2,858

kg.), Payload 2,900 lbs. (1,316 kg.), Wing loading 17.75 lbs./sq. ft.

(86.66 kg./sq. m.). Power loading 14 lbs./h.p. (6.34 kg./h.p.).

Weights and Loadings (Landplane).—Weight loaded 6,050 lbs.

(2,744 kg.), Wing loading 17 lbs./sq. ft. (83 kg./sq. m.). Power

loading 13.4 lbs./h.p. (6.07 kg./h.p.).

Performance (Seaplane—fully loaded).—Maximum speed (450 h.p.)

138 m.p.h. (222 km.h.) at 2,300 ft. (700 m.), Cruising speed (300

h.p.) 121 m.p.h. (195 km.h.) at 10,000 ft. (3,060 m.), Stalling speed

(without flap) 67 m.p.h. (108 km.h.), Stalling speed (with 40

degree flap) 58 m.p.h. (94 km.h.), Initial rate of climb 675 ft./min.

(206 m./min.), Take-off run, (no wind, 30 degree flap) 733 yds.

(670 m.).

FLEET.

FLEET AIRCRAFT LTD.

Head Office, Works and Airport : Fort Erie, Ontario.

Managing Director ; T. Y. Smith.

Sales Manager ; J. M. Pengelly.

Chief Engineer : G. E. Otter.

Fleet Aircraft, Ltd., is an independent Canadian-owned company and is completely managed by Canadian personnel.

The Company built an up-to-date factory at Fort Erie in 1930 and by 1938-89 this factory had been enlarged to ten times its original size.

The Company took over the complete World's rights from the Consolidated Aircraft Corpn. (U.S.A.), its original parent company, for the Fleet Trainer. It later developed the Model 50K twin-engined freighter and the Model 60 two-seat advanced training monoplane.

The Fleet Trainer, or Finch, was used for primary training in the Commonwealth Air Training Plan. An original order for: 404 was completed in 1940 many months ahead of schedule.

A further contract for 202 was completed in 1941.

The Model 60, or Fort, was put into production for use as an advanced training type under the Commonwealth Air Training Plan, but on the completion of the IGOth machine production ceased on this type in favour of the Fairchild M-62, or Cornell, which had been adopted as the primary trainer in the R.C.A.F. to replace the Foyt and the Finch.

The first Cornell was turned out in the Summer of 1942, one month ahead of schedule. Over 1,000 were produced in the first year of production. Owing to curtailment in the Training Programme production of the Cornell was tapered down towards the end of 1943 and finally expired in May, 1944. Thereafter the Company undertook sub-contract work on the Canadian Lancaster production programme.

Since the end of the War the Company has decided to abandon the Finch and Fort designs and to concentrate on the development of new aircraft. Its first post-war design is the Model 80 Canuck, a two-seat light cabin monoplane with an 85 h.p. Continental engine, and the company is now engaged on an initial production programme of 1,500 aircraft. Other types of aircraft are under development.

#### THE FLEET MODEL SO CANUCK.

Type.—Two-seat Light Cabin Monoplane.

Wings.—Strut-braced high wing monoplane. Two-spar structure in two sections attached directly to fuselage and braced by streamlined steel-tube struts. Spars have extruded alloy booms with 24ST webs and steel fittings. Ribs of pressed 24ST sheet. . Aluminium alloy tubular drag-struts. Metal leading-edge and fabric covering over remainder. Cross wing area 173.6 sq. ft. (16.12 sq. m.). All-metal mass-balanced ailerons with metal covering.

Fuselage.—Welded chrome-molybdenum steel-tubular structure, with light wooden formers and fabric covering. Panels behind fire-wall and front decking of aluminium-alloy.

Tail Unit.—Strut-braced monoplane type. Welded chrome-molybdenum steel structure with fabric covering. Horn-balanced and mass-balanced rudder. Adjustable elevator trim-tab. :

Landing Gear.—Fixed two-wheel divided type, consisting of two side-vees and half-axles of welded chrome-molybdenum steel tubing hinged to underside of fuselage. Rubber-cord shock-absorbers under cabin floor, Goodyear single-disc hydraulic wheel brakes, toe-operated. Track 6 ft. 11 in. (1.86 m.). Sooty steerable full-swivelling tail-wheel carried on leaf spring shock-absorber. Tail float or ski landing gear optional.

## Notes on "Civil Aviation"

Power Plant,—One Continental C86-12J four-cylinder horizontally opposed air-cooled engine rated at 85 h.p. at 2,676 r.p.m., and equipped with Exocel fuel-injection system. Two-blade wooden fixed-pitch surserow, with variable-pitch airscrew optional. 16 Imperial gallon (73 litres) fuel tank in fuselage, with long-range tank of 21 Imperial gallons (95 litres) capacity optional. Oil tank of 1 U.S. gallon (4 litres) capacity attached to engine.

Accommodation.—Enlosed cabin seating two side-by-side with dual controls. Adjustable welded steel-tube seat with 16 x 38-in. (41 X 96 C.T.O.) rubber cushion and back. Access by aluminium alloy door on each side. Plexiglas windshield and side-panels. Cellulose acetate roof windows. Baggage compartment 36 x 34 x 112 in. (91 X 86 X 81 cm.) with allowance of 104.5 lb. (48 kg.) behind seats.

DIMENSIONS (Landplane).—Span 34 ft. (10.36 m.), Length 22 ft. 4 in. (6.83 in.), Height 7 ft. 1 in. (2.16 m.).

Weights and Loadings (Landplane).—Weight empty 8.58 lbs. (389 kg.). Fuel and oil 122.5 lbs. (55 kg.). Pilot and passenger 340 lbs. (164 kg.). Baggage 104.5 lbs. (48 kg.). Weight loaded 1,425 lbs. (645 kg.). Wing loading 8.2 lbs./sq. ft. (40 kg./sq.m.). Power loading 16.7 lbs./h.p. (7.5 kg./h.p.).

Weights and Loadings (Seaplane).—As Landplane except weight empty 1,018 lbs. (462 kg.), Baggage 19.5 lbs. (9 kg.). Weight loaded 1,500 lbs. (680 kg.). Wing loading 8.6 lb3./sq. ft. (42 kg./sq. m.), Power loading 17.6 lbs./h.p. (8 kg./h.p.).

Weights and Loadings (Skiplane).—As Landplane except weight empty 913 lbs. (414 kg.). Weight loaded 1,480 lbs. (672 kg.). Wing loading 8.5 lbs./sq. ft. (41.5 kg./sq. in.). Power loading 17.4 lbs./h.p. (7.88 kg./h.p.).

Performance (Landplane).—Maximum speed 111.5 m.p.h. (179 km.h.), Cruising speed (66% power) 100 m.p.h. (161 km.h.). Stalling speed 45 m.p.h. (72 km.h.). Maximum diving speed 160 m.p.h. (257 km.h.), Initial rate of climb 550 ft./min. (168 m./min.), Initial rate of climb (less passenger) 700 ft./min. (213 m./min.). Service ceiling 12,000 ft. (3,660 m.). Range at cruising speed (no reserve) 400 miles (644 km.), Take-off distance in 7 m.p.h. (11 km.h.) wind from asphalt 140 yds. (128 m.), Fuel consumption at cruising speed 25 m.p.g. (8.8 km. per litre).

Performance (Seaplane).—Maximum speed 103 m.p.h. (166 km.h.), Cruising speed (66% power) 88 m.p.h. (142 km.h.), Stalling speed 46.5 m.p.h. (75 km.h.), maximum diving speed 160 m.p.h. (257 km.h.), Initial rate of climb 425 ft./min. (130 m./min.), Range at cruising speed (no reserve) 250 miles (563 km.), Fuel consumption 22 m.p.g. (7.7 km. per litre).

Performance (Skiplane).—Maximum speed 105.5 m.p.h. (170 km.h.), Cruising speed (66% power) 92 m.p.h. (148 km.h.), Stalling speed 46.5 m.p.h. (75 km.h.), Maximum diving speed 160 m.p.h. (257 km.h.). Initial rate of climb 475 ft./min. (145 m./min.), Range at cruising speed (no reserve) 350 miles (579 km.), Fuel consumption 22.6 m.p.g. (8 km. per litre).

MacDonald Bros. Aircraft Ltd., Winnipeg, Manitoba - manufacturer of EDO floats - **ALUMINUM ALLOY**  
**FOR LIGHT WEIGHT EXCELLENT WATER AND AIR PERFORMANCE EASY MAINTENANCE -LONG**  
**SERVICE LIFE - ONLY FULL LINE OF FLOATS FOR ALL PLANES**

## Notes on "Civil Aviation"

September 1946 : "**Air Engineers' Society of Canada**" <sup>277</sup> submits an application under the "Wartime Labour Relations Regulations (P.C. 1003)" to the Canadian Dept of Labour on behalf of "Air Engineers' *below the rank*(s) of:

1. Assistant Chief Mechanic, and
2. Assistant Chief Inspector

employed by TCA, Winnipeg Manitoba" for Certification. (Canadian Dept. of Labour reference no. DLS 7-721).

The application (Labour Gazette October 1947, pg 1450 (L.G., October 1947, p. 1450) is rejected after *an investigation into the application and a public Hearing* - Reasons for the judgement *is not given at this time*.

17 December 1947 : Air Engineer's Society of Canada application for certification of bargaining representatives for a bargaining unit consisting of "ALL Licensed Air Engineers BELOW THE RANK of assistant chief mechanic and assistant chief inspector employed by TCA - Board decision ruling in Ottawa : <sup>278</sup>

The Board consists of :

1. Mr. A.H. Brown Vice-Chairman
2. Mr. Deschampes
3. Mr. Hills
4. Mr. Mosher
5. Mr. Picard
6. Mr. Taylor

The applicant : The Air Engineers' Society of Canada - represented by Mr. J.K Godfrey and Mr. G.Land.

Respondent : Trans-Canada Air-Lines (a government department)- represented by Mr. E.H. Moncrief and Mr. A.M Sutherland

Intervener(s) : - represented by Mr. G.P Schollie and Mr. G.M. Boak and Mr. S. Wallace

1. Air-line lodge 714
2. Trans-Oceanic Lodge 1751
3. International Association of Machinists

The Applicant Claim(s) :

1. Air Engineers are Licensed by the D.O.T and constitute a "Separate Craft" and as such are entitled to recognition as a separate and appropriate craft unit for collective bargaining issues.
2. The interests of the Air Engineers' are not adequately represented by the Intervener unions as the membership of such unions is predominantly "Shop" personnel (unlicensed personnel)

The Respondent Claim(s) :

1. Licensed Air Engineers are NOT a "Separate craft group" but
2. Licensed Air Engineers are part of the "mechanic craft" group - employed in it's maintenance and overhaul departments, and
3. The Respondent OPPOSES the application.

The Intervener(s) Claim(s) :

1. Licensed Air Engineers are NOT a "Separate craft group" but
2. are part of the mechanic craft group - employed in it's maintenance and overhaul departments, and
3. OPPOSES the application.
4. Deny that the "Interests of the Air Engineers are inadequately represented" as alleged.
5. There are no technical OR professional educational qualifications required for a licensed air engineer.
6. The Air Engineer works up thru the ranks of mechanic classifications in the company's establishment, namely:

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<sup>277</sup> "Air Engineers' Society of Canada" The Labour gazette July-December 1947 by Canada. Dept. of Labour Publication date 1947 - Topics Labor and laboring classes - Publisher Ottawa, Queen's Printer - Collection robarts; ontario\_council\_university\_libraries; toronto - Digitizing sponsor University of Guelph, University of Windsor, York University and University of Toronto Libraries - Contributor Robarts - University of Toronto Language English - Volume 47 pt. 2 - <https://archive.org/details/labourgazette1947p2cana?q=Air+Engineers%27+Society+of+Canada>

<sup>278</sup> The Labour gazette January-June 1948 by Canada. Dept. of Labour - Publication date 1948 - Topics Labor and laboring classes - Publisher Ottawa, Queen's Printer - Collection robarts; ontario\_council\_university\_libraries; toronto - Digitizing sponsor University of Guelph, University of Windsor, York University and University of Toronto Libraries - Contributor Robarts - University of Toronto - Language English - Volume 48 pt. 1 - <https://archive.org/stream/labourgazette1948p1cana#page/n113/mode/2up/search/Air+Engineers>

## Notes on "Civil Aviation"

1. Learner
2. Mechanic
3. Senior Mechanic
4. Air Engineer
7. In order to obtain an Air Engineer License from the Dept. of Transport, an Air Engineer must go thru a training period of several years on air-engines, the length of time depending upon the:
  1. type of air engine, and
  2. type of aircraft and
  3. the company requirements

The Board is advised (by whom ??) that:

1. DOT regulations require the Airworthiness of the aircraft must have been certified and signed for by an Air Engineer before it may be flown.
2. an Air Engineer cannot sit for a DOT examination (for the license to certify) for the type flown by the company until he:
  1. has had a 5 year training period, and
  2. has been approved by the company to sit for such examination.

18 July 1947 : PRESIDENT'S LETTER APPOINTING THE Air Policy Commission

DEAR Sir :

The rapid development of aviation in recent years has made many of our former concepts out of date.

At the same time, there exists a danger that our national security may be jeopardized and our economic welfare diminished through a lowered aircraft production and a failure of the aircraft industry to keep abreast of modern methods, with consequent retarding of the development of air transportation. There is an urgent need at this time for an evaluation of the course which the United States should follow in order to obtain, for itself and the world the greatest possible benefits from aviation.

## Notes on "Civil Aviation"

It is for these reasons that, upon the recommendation of the Secretaries of State, War, Navy, and Commerce and of the Air Coordinating Committee, I am creating a temporary Air Policy Commission to make an objective inquiry into national aviation policies and problems, and to assist me in formulating an integrated national aviation policy. Because of your knowledge of our national needs and our industrial capabilities, as well as your public-spirited concern for the national welfare, I ask you to serve on this Commission.

The Air Policy Commission should study, among other pertinent aspects of the problem, such questions as the current and future needs of American aviation, including commercial air transportation and the utilization of aircraft by the armed services; the nature, type, and extent of aircraft and air transportation industries that are desirable or essential to our national security and welfare; methods of encouraging needed developments in the aviation and air transportation industry; and improved organization and procedures of the Government that will assist it in handling aviation matters efficiently and in the public interest. The final recommendations of the Commission must, however, go beyond the limits of any one phase of aviation.

They should be so broad in scope and purpose that they will assist in revising old policies and in framing new ones, and will serve as a guide for formulating a carefully considered national air policy.

Because of the urgency of the problem, I request the Commission to complete its studies in time to submit its final recommendations to me by 01 January 1948.

In its work, the Commission will have the full cooperation of all agencies of the Government, including the Air Coordinating Committee, which has been making detailed studies of aviation policies and problems.

Although the Commission will organize its own regular staff and secretariat, the Secretary of Commerce will provide any special staff assistance which may be needed, as well as office headquarters and routine administrative services.

Sincerely yours,  
HARRY S. TRUMAN.

DECEMBER 30, 1947. LETTER OF TRANSMITTAL by the US President's Air Policy Commission

DEAR MR. PRESIDENT: We have the honor to transmit the report on national aviation policy as directed by your letter of July 18, 1947, establishing the undersigned Air Policy Commission.

During the 5-month period since the appointment of the Commission we have consulted on all phases of aviation with the best-qualified Government and private sources.

The members of the Commission are in unanimous agreement on the conclusions expressed.

Respectfully,

THOMAS K. FINLETTER, Chairman.

GEORGE P. BAKER, Vice Chairman.

PALMER HOYT, Member.

JOHN A. McCoNE, Member.

ARTHUR D. WHITESIDE, Member.



**CANADIAN AVIATION - 1948**

**01 January 1948 : United States : SURVIVAL IN THE AIR AGE .**

A Report by the US President's Air Policy Commission International Competition

It takes 4 to 7 years to develop a new plane from the engineering board to production. It takes longer than that to develop many of the weapons which will be used in any future war. No airplane was used by the United States in World War II which had not been designed before we entered the war.

Only improvements were made after Pearl Harbor; there was no change in fundamental design in any plane which saw war service. [...] We must therefore be prepared [...] Moreover, we must not think that the atom bomb alone will win a war [...] we cannot drop atomic bombs and sit back. What we need during this Phase is an integrated Military Establishment, (i) capable of an atomic attack, (2) stronger in air power than that of any other country, and (3) capable of a sustained and powerful air counteroffensive, either directly or by the way of intermediate bases [...] Once committed to combat, losses of planes and personnel are very high. From experience in the European and Pacific theaters, we know that many operating groups lose 25 percent of their equipment every month of actual combat. Losses must be replaced immediately. At the outbreak of a war, industry cannot expand in time to make up combat losses in the first year. Unless, therefore, there are planes in reserve, combat forces would diminish rapidly after the beginning of hostilities and we would be left without a fighting Air Force after a few months of war.

The solution of this problem is one of the most serious tasks faced by the Air Force and the aircraft industry. Plans for the rapid expansion of industry will help, but no evidence presented to us indicates that any plan can be devised which will insure the production of planes by industry in time to replace combat losses in the first year of a war. We are informed by the Bureau of the Budget that for the current year Out of the total budget of \$10,098,000,000, \$4,050,000,000 is for the Air Force and naval aviation (exclusive of the cost of construction and operation of aircraft carriers) It is not enough to have an Air Force in being on the day war begins. Mobilization plans must be made in peacetime to enable us to expand our production of airplanes and other equipment as

rapidly as possible after war begins. This subject is dealt with in section II below, in our discussion of the aircraft industry.

Plans must also be made in peacetime for the rapid mobilization of our manpower in event of war. In the case of our Air Establishment this problem centers on the so-called civilian "components" of the Air Force and naval aviation. In the case of the Air Force the civilian components are the National Guard and the Air Force Reserve.

In the case of the Navy, they are the Organized Reserve and the Volunteer Reserve. The problem is to have enough trained personnel to man and handle the planes which are in storage and those which will be built after war begins.

We have examined this question but are not prepared to make specific recommendations with respect to the air components. There is no point in developing a training program until the plans to provide the planes are farther advanced. If the recommendations of the Commission for the increase in the Air Establishment are put into effect, it will be necessary to develop corresponding plans for the training of pilots and ground crews to man these planes.

When the Industrial Mobilization Plan has been farther advanced, estimates must be made as to the number of planes to become available under this plan; and corresponding plans for the training of personnel must be developed.

A strong aircraft industry is an essential element in the Nation's air power. Our air establishment would be useless unless backed by a manufacturing industry skillful in technological application, efficient in production, capable of rapid expansion, and strong in basic financial structure.

On the basis of the evidence, the over-all aircraft industry of the United States now meets only the first of these specifications. Since World

War II, military aircraft have become much more complicated. The net result has been to increase the number of their component parts and to complicate their final assembly. The most efficient aircraft in the world, no matter how brilliant its performance, is of little value to the national defense unless it can be manufactured quickly in large

quantities.

The team concept is not limited to research and design. Production planning and production control groups are equally necessary, but it is more difficult to keep such teams together in peacetime. When production drops off to mere jobbing levels, their functions simply disappear. Means must be found to keep alive the special skills that have been evolved in these particular fields during the war years. If they are allowed to be dissipated, time and effort will be needed to replace them in a future emergency.

The techniques of aircraft manufacture widely with changes in the volume of orders. It is uneconomical to do extensive special tooling, either for manufacture or assembly, to turn out a few units. If, on the other hand, thousands of similar airplanes are required, the

expenditure of relatively large sums for special jigs, fixtures, and tools is justified. Between the two extremes are wide areas in which the exercise of good judgment is the only controlling factor. The only way such judgment can be generated is through actual production experience. In a freely competitive economy the number of companies manufacturing

a particular product levels off at a point determined by the ordinary laws of economics. In the case of the aircraft industry, however, it would be dangerous to rely only on the operation of these laws. The demand factor fluctuates too violently from peace to war.

If a reasonable degree of expansibility is to be maintained for periods of emergency, it is necessary to exercise some industry-wide control in the interests of national security. It may even be desirable to keep a few marginal manufacturers in business who might be forced out if the normal laws of supply and demand were allowed to operate.

Based on considerations of maximum security, it is essential to maintain at least two sources of supply for similar products. It has long been the practice for the procurement agencies of the Army and Navy to keep alive at least two separate producers of each type of aircraft, as well as two or more separate sources for each of the major components. We believe that this policy is sound and should be continued. It develops automatically a degree of manufacturing dispersal which might otherwise not exist. In a field in which the technology is changing rapidly, competition between design and development groups results in continuously improved products, and price competition between suppliers results in lower unit costs. The financial difficulties which harass the aircraft industry today

stem from many causes. Uncertain Government policies account for many of them. Some reflect faulty judgment by management. Others have come about from particular circumstances which have surrounded this peculiar industry in the postwar period of readjustment.

Some of them are :

- (1) A product that is, almost indivisibly, a weapon of war and a carrier of commerce;
- (2) A market with but one major customer, the Government, which purchases 80 to 90 percent of its entire output;
- (3) A violently fluctuating demand, due to uncertainty of requirements of its major customer;
- (4) A lack of the production continuity which is vitally important in sustaining a trained work force and in keeping production costs to a minimum;
- (5) A rapidly changing technology which causes a high rate of design obsolescence and abnormally high engineering costs;
- (6) An extremely long design-manufacturing cycle;
- (7) An organization in excess of present requirements.

## Notes on "Civil Aviation"

The financial strength of any individual company or of the industry cannot be measured by the amount of sales, the extent of working capital, or the total floor space of its plants. It depends upon profitable operation. A profitable organization will attract capital and credit. It will be able to employ and retain the most capable engineers and craftsmen. The concern which consistently loses money will deteriorate, its financial position will weaken, and the quality of its product will suffer as its best employees drift away in search of better opportunities. The Government cannot guarantee profits. Government can and should, however, create an atmosphere as conducive as possible to profitable operations in the aircraft manufacturing business. This can be done by longer-range planning, adequate volume, and the abandonment of uneconomic procurement practices. Under these circumstances, it will be the task of each manufacturing company to work out its own salvation. The 15 major airframe companies are:

1. Bell Aircraft Corp.
2. Boeing Airplane Co.
3. Consolidated Vultee Aircraft Corp.
- 1
4. Curtiss-Wright Corp.
- 2
5. Douglas Aircraft Co., Inc.
6. Fairchild Engine & Airplane Corp.
7. Grumman Aircraft Engineering Corp.
8. Lockheed Aircraft Corp.
9. The Glenn L. Martin Co.
10. McDonnell Aircraft Corp.
11. North American Aviation, Inc.
12. Northrop Aircraft, Inc.
13. Republic Aviation Corp.
14. Ryan Aeronautical Co.
15. United Aircraft Corp.

3

The nine major makers of personal and small commercial planes, most of whom were important producers of small military aircraft and aircraft components during the war, are:

1. Aeronca Aircraft Corp.
2. Beech Aircraft Corp.
3. Bellanca Aircraft Corp.
4. Cessna Aircraft Co.
5. Engineering & Research Corp.
6. Luscombe Airplane Corp.
7. Piper Aircraft Corp.
8. Taylorcraft, Inc.
9. Texas Engineering & Manufacturing Co.

most of the companies which were temporarily in aviation activities during the war have withdrawn from aviation with the exception of the Allison Division of General Motors, General Electric Co., and the Westinghouse Co., all of whom are active in the turbo-jet engine field.

We recognize the validity of the argument but recommend that the services weigh carefully the savings possible through contract overhaul, and the possible long-term advantages of building up civilian staffs trained in such work for use in an emergency.

Federal regulation of personal aircraft. The present detailed requirements

## Notes on "Civil Aviation"

for certificating light aircraft of new design are complex, and tend to retard experimental design. The Commission agrees with the Administrator of Civil Aeronautics that it is time to recognize and encourage the moral and legal responsibility of the light aircraft manufacturers for the safety and integrity of their products. The Federal Government should continue to promulgate aircraft design standards in collaboration with established technical groups, research agencies and safety organizations, but compliance with these standards should be the primary responsibility of the manufacturer. After careful initial checking for competence, each should be required to certify to the airworthiness, the proper flight characteristics and operational limitations of the production type and to the fact that the airplane has been submitted to an exhaustive performance and service test. The present testing procedure now executed by the CAA should be conducted and sworn to by the manufacturer.

To discourage the entrance of irresponsible or technically illequipped firms into the private aircraft industry and to prevent the deterioration of standards among established firms, we recommend that the Government establish simplified but adequate standards of fitness and ability to be met and maintained by each company selling personal aircraft. A manufacturer's certificate based on proven ability should be issued by the Department of Commerce. Periodic spot checks should be made, and the Department should have the power of revocation for just cause. By thus certifying qualified manufacturers they could, in turn, certify all personal airplanes. Conclusion. Setting up the National Military Establishment was one of the most important moves in the long struggle to provide the United States with adequate air power. As it settles down into a smooth running organization it can, and must, deal with the many policy problems that have long plagued our aircraft manufacturing industry in peacetime.

A number of those problems have been laid before the Commission in testimony. Our consultants have called our attention to others. We have seen some for ourselves in visiting aircraft and engine factories, and a few of our great research and development centers.

The above recommendations embody our opinion of the minimum requirements of the aircraft industry at the present time. The needs of this important element of our national defense must be dealt with sympathetically by those charged with the future security of the United States. During World War II we concentrated on the development of existing types of aircraft for production, and practically abandoned fundamental research in the aeronautical sciences. By VJ-day our reserve of research information was largely exhausted. If we are to have an air establishment of the first quality, we will have to concentrate, as other nations are doing, on our fundamental aeronautical research. Development, that is the making of new aeronautical devices, cannot move ahead faster than our fundamental research. The most serious shortage is in personnel. Due to the hiatus of the war years in the output of young engineers and scientists we are short of qualified people. Recognizing this need, the Commission is unanimous in its belief that every possible encouragement should be given to our universities and scientific institutions to train more, and better aeronautical scientists. Undergraduate course; should be strengthened and exceptional students encouraged to continue in advanced work. The proposed establishment of a National Science Foundation with its program of grants and fellowships would help materially. Government contracts for supplemental research granted to educational institutions offer one of the most effective means of providing funds for the purpose. The Commission recommends that this method be developed as far and as fast as is consistent with

## Notes on "Civil Aviation"

the results obtained.

For national security, second best military aircraft are simply not good enough.

On the commercial side, inefficient or unsafe aircraft and unreliable or inadequate navigational aids cannot be tolerated.

We must keep ahead in the race for military supremacy. And it is a race. Although the great aeronautical laboratories of Germany,

Italy, and Japan have been dismantled and destroyed, other strong contenders are now in the field. Britain, France, and Russia are

vigorously pushing new aeronautical research programs. The British, in spite of a generally strained economy, have made drastic sacrifices to make available this year some 30,000,000 pounds sterling (\$120,-000,000) for air research. They are modernizing war-worn equipment and are installing extensive new facilities, among them a National Gas Turbine Establishment at Whetstone, the new Aeronautical Research Center at Bedford, and the new Telecommunications Establishment at Malvern.

### Status of U. S. Aeronautical Research and Development

Military aviation in the United States had its beginning with the

establishment of the Aviation Section, Signal Corps, in 1907. A

few years later (1911) the Navy set up an Aeronautics Group in the Bureau of Navigation, which later became the Bureau of Aeronautics.

By 1915 it had become obvious that neither branch of the service could cope adequately with the problem of satisfying a growing need for basic research in aeronautics. To meet that need, Congress authorized (1915) the formation of the National Advisory Committee for Aeronautics, an independent Federal agency. Since that time, the NACA has produced most of the basic aerodynamic and structural data from which the Navy and the Air Force and the aviation industry have developed practically all commercial and military aircraft. It now operates three of the world's largest aeronautical laboratories, (1) at Langley Field, Va.; (2) at Moffett Field, Calif.; and (3) at Cleveland, Ohio. The first two cover aerodynamic, hydrodynamic, structural, and flight research. The latter engages chiefly in power plant studies of all kinds.

On March 21, 1946, a National Aeronautical Research Policy was formulated by the Army Air Forces, the Navy's Bureau of Aeronautics, the Civil Aeronautics Administration, the NACA and the aircraft industry. It was promulgated largely to clarify the relationships of the NACA with the other research and development agencies. Power plants. The Commission has been advised by witnesses that

gas turbines and rocket engines will ultimately replace reciprocating engines in future military aircraft. There is no doubt that these new and powerful power plants hold great promise for the future and research and development on them must be pursued diligently. The jet engine is applicable to high-speed fighters and fast bombers. It is the power plant that will make possible routine flights in the supersonic-speed range. Its development, therefore, is of prime importance.

The present limitation of the jet engine is its high fuel consumption, which reduces the range of the plane. Its service life is also relatively short. Research must be directed toward overcoming both handicaps.

The turbine-propeller combination offers possibilities for range improvement at somewhat lower aircraft speeds. Continued research and development on this type is also important.

The suggestion has been made that all research and development on piston-type engines should be abandoned to permit full concentration on the newer types. In this we cannot agree. The conventional combination of the piston engine and propeller will be useful for many years for both long-range bombers and transports and, therefore, any suggestion of the abandonment of research and development in this

## Notes on "Civil Aviation"

field seems premature. Moreover, it is not impossible that new applications of ducted fan or compressor jet designs may actually open up new uses for the piston engine. These potentials should be completely exhausted before the conventional engine is discarded.

Transport equipment. The design of transport and cargo aircraft benefits directly from research and development on military types. As far as basic theory is concerned, laboratory data secured for one class applies equally well to the other. For this reason there appears to be little need for specialized basic research (apart from develop

### 1 May 1948 :

Trans Canada Air Lines began service to Bermuda on a twice-weekly basis operating Canadair North Stars. One schedule operating to and from Montreal and the other to and from Toronto.

1948 : Lionel Chevrier is Canada's Minister of Transport.

1948 : Air Commodore Frank Whittle retires from the RAF and is knighted, joins BOAC as a technical advisor.

1948 : The Royal Canadian Air Force Association was formed as a national advocacy group<sup>279</sup> to support the Royal Canadian Air Force, and to unite Air Force veterans of the Second World War. Former Chief of the Air Staff, Air Chief Marshal L.S. Breadner accepted the task of organizing the new association. He successfully enlisted the participation of various community groups and clubs of former airmen and airwomen, and also invited unaffiliated air veterans to join as members-at-large. An Order-in-Council legitimized the new association. With Treasury Board funding and headquarters accommodation provided by the Department of National Defence, the RCAF Association held its first annual meeting in Ottawa, 16 September, 1948 at which ACM Breadner was named the first Dominion President.

Much organizational and administrative work followed, and the first membership cards were issued in February, 1949.

Constitution and Bylaws were framed so that the Association could be incorporated under the Companies Act.

A Charter under the Act was granted by the Secretary of State of Canada, on 14 May, 1951.

Over the years the Association grew and prospered, closely linked with the Royal Canadian Air Force.

In 1968, the RCAF ceased to exist with the unification and integration of Canada's three armed services. This results in a gradual disconnect between the RCAF Association and Canada's AIR element, redressed to some degree with the formation of Air Command in 1975.

in 1975 Air Command became the focal point for all regular and reserve Air Force activity.

In 1992 Air Command challenged the RCAF Association to reposition itself as both an advocacy group and a focal point for Air Force veteran activity.

12 August 1948 : DC-4M1 Argonaut operated by Trans Canada Air Lines crashed at Sydney, Nova Scotia, with 17 people on board, 11 passengers and 6 crew. No fatalities. Source: Aviation Safety Network website at <http://aviation-safety.net/>

## CANADIAN AVIATION - 1949

14 January 1949 : First Non-Stop Trans-Canada Flight from Vancouver to Halifax.

### April 1949 :

RCAF Maintenance Command re-designated Air Materiel Command (AMC) at Rockliffe.

### April 1949 :

*T.A. Fairbairn - obtains Air Engineer license, with A and C certification*

27 July 1949 : De Havilland G-5-1 / G-ALVG "Comet" prototype first test flight at Hatfield. Sir Geoffrey de Havilland's 67th birthday. De Havilland Chief Test Pilot John Cunningham turned 33 years old on the same day.

Comet 1

13 Production aircraft built :

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<sup>279</sup> RACF Association History : Air Force Association of Canada Constitution & By-laws 2009

## Notes on "Civil Aviation"

Comet 1A : 8 built (1 scrapped)

Updated Comet 1 with higher weight and fuel capacity with water-methanol injection.

All Comet 1A's were recalled and were damaged in testing or were scrapped.

Comet 1X

2 Comet 1A's rebuilt with heavier-gauge skins to a Comet 2 standard for the fuselage.

Comet 1XB

4 Comet 1A's upgraded to a 1XB standard with a reinforced fuselage structure and oval windows.

DH 111 Comet Bomber- Not built

A nuclear bomb carrying design which received a negative evaluation from the Royal Aircraft Establishment.

Comet 2X

1 Built: Comet Mk 1 powered by four Rolls-Royce Avon 502 turbojet engines and used as a development aircraft for the Comet 2.

Comet 2E

2 Built : Comet 2 fitted with Avon 504's (Inner) and Avon 524's (Outer) and used by BOAC for proving flights.

Comet T2

2 Built : Comet 2 for the RAF as crew trainers.

Comet C2

8 Built : Comet 2 originally for commercial use but completed for use by the RAF.

Comet 2R

3 Built : Comet modified for use in radar and electronic systems development for the RAF to monitor Warsaw Pact signal traffic.

De Havilland set about relaunching Comet with a stronger and larger version of the aircraft whilst a small number of remaining aircraft were modified to Comet 1X or 1XB standard with a reinforced structure and (1XB) elliptical window apertures. One aircraft (G-ALYT) was also fitted with Avon 502 engines and larger intakes and appeared as the prototype Comet 2X - <http://www.baesystems.com/en/heritage/de-havilland-comet-1---2>

June 1949 : U.S.-Canadian Civil Aviation Meeting : USA : U.S.-Canadian Civil Aviation Meeting

The Department of State announced on May 23 that Russell B. Adams, Member, Civil Aeronautics Board, and Livingston L. Satterthwaite, Chief, Division of British Commonwealth Affairs, Department of State, will be chairman and vice chairman respectively of the United States delegation to the Conference on Civil Aviation between the United States and Canada. The Conference is scheduled to convene at New York City on May 23, 1949. Other members of the delegation are as follows

:

Louis W. Goodkin, Assistant Director, Bureau of Economic Regulations, Civil Aeronautics Board

George S. Roper, Civil Air Attache, American Embassy, Ottawa

Sydney B. Smith, Chief, Foreign Air Transport Division, Bureau of Economic Regulation, Civil Aeronautics Board

Stuart G. Tipton, General Counsel, Air Transport Association

Joseph J. Wolf, Acting Assistant Chief, Aviation Division, Department of State

The purpose of the Conference will be to discuss general civil aviation problems with Canada.

## Notes on "Civil Aviation"

Prior discussions on these problems were held in the winter of 1946-47.<sup>280</sup>

### CANADIAN AVIATION - 1950

1950 : Canadian *National Defence Act* (NDA). Replacing the former *Militia Act*, *Naval Services Act*, and *Royal Canadian Air Force Act*, the NDA introduced new legislative provisions for the Canadian Armed Forces and, for the first time, prescribed a Code of Service Discipline common to all three services. To acknowledge many statutory duties and functions, the NDA also enshrined in statute for the first time the position of the JAG as a Governor in Council appointment.

July - August 1950 : second Comet prototype (G-5-2 / G-ALZK) first test flight. Over 500 hours of flight test and route proving trials with technical observers on board from interested International Airlines will be accomplished.

#### October 1950 :

Canada has only one Judge Advocate General<sup>281</sup>. He may be a member of the Navy, Army or Air Force or a civilian. He has three deputies, one from the Navy, one from the Army and one from the Air Force and a staff composed of officers of the three services. The work of the office is divided on a purely functional and not service basis.

For example, the review of courts martial is carried out under the supervision of an Army officer, and all claims are dealt with under the supervision of an Air Force officer.

I may say that we have found this system works very well.

We have taken a further step recently.

At the last session of Parliament there was enacted an act known as the National Defence Act.

Under that act we have one code of discipline for the three services and identical systems of disciplinary administration.

All courts will follow the same procedure from now on and they will apply the same law.

This, we think, is a major step forward toward service unification.

We have felt that it is not fair that a naval rating who might commit an offence should be subject to any different punishment than an airman who commits the same offence.

All the provisions of the new code have not as yet gone into effect.

However, the part that has is working out very satisfactorily.

Now, Mr. Chairman, I have mentioned briefly the legal aspects of the efforts we in Canada are making to achieve some measure of unification in our armed forces.

May I suggest, however, that unification of the services of one nation is not enough.

Today we are faced with ever present danger.

We must not only unify our own national services, but we must also unify our national services with those of our allies so that we are ready and able to meet any threat from whatever source it may come with the full strength of our united forces.

That, I think, ladies and gentlemen, is all important.

*"The military establishment is, of course, a necessary organ of government, but the reach of its power must be carefully limited lest the balance between freedom and order be upset. The maintenance of the balance is made more difficult by the fact that while the military serves the vital function of preserving the existence of the nation, it is, at the same time, the one element of government that exercises a type of authority not easily assimilated in free society."*<sup>282</sup> Earl Warren, Chief Justice of the United States

Brigadier W.J. Lawson and Lieutenant Colonel J. C. A. Campbell also attended the business meeting of the Association at the Lee House on September 20 at which time Brigadier Lawson very interestingly developed the history of the Judge Advocate General's office in the British and Canadian Forces and gave some insight into the functioning of his own office as the unified law division for all the Armed Forces of Canada.

The address of Brigadier Lawson at the annual meeting is set forth below:

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<sup>280</sup> Department of State Bulletin : Economic Affairs : June 5, 1949 pg 725 Vol. XX, No. 519 June 12, 1949

<sup>281</sup> Brigadier W. J. Lawson Judge Advocate General of the Canadian Forces Addresses the Association : BULLETIN No. 6 - The Judge Advocate JOURNAL - Published Quarterly By JUDGE ADVOCATES ASSOCIATION - An affiliated organization of the American Bar Association, composed of lawyers of all components of the Army, Navy, and Air Force

<sup>282</sup> MILITARY LAW UNDER THE CHARTER, 1986, Cony, David J.



## Notes on "Civil Aviation"

Mr. Chairman, gentlemen.

May I take this opportunity to thank you for permitting Colonel Campbell and me to attend your most interesting meeting this afternoon. I assure you that the information we have obtained here in Washington during these past few days will be extremely helpful and will prove to be of great value to us in our work when we return to Ottawa.

I thought this afternoon I might say something very briefly about the organization of the office of the Judge Advocate General in Canada.

To do that intelligently, perhaps I should refer briefly to its history.

Although most of you are no doubt familiar with the history of the office of the Judge Advocate General in the British Forces, some of you may not be.

Originally the power to convene courts martial was given to individual commanders as the need for it arose.

These commanders, of course, would employ members of the Bar to assist them in carrying out the legal aspects of their duties.

Such members of the Bar were employed temporarily for a particular campaign or war.

Early in the nineteenth century the office of the Judge Advocate General was created.

Oddly enough, this was a purely political office.

The Judge Advocate General was a minister of the Crown, holding a position similar to your Secretary of War or your Secretary of the Navy.

The Judge Advocate General was, as you would call it in the United States, a secretary.

He was appointed as a member of the government, and when the government was defeated, he went out with the rest of the cabinet.

This had many advantages, and gave the Judge Advocate General a great deal of influence.

But, on the other hand, it had very obvious disadvantages.

So, late in the nineteenth century this system was done away with and the President of the Probate, Divorce and Admiralty Division was appointed Judge Advocate General on a part-time basis.

It became obvious the job was too big to be handled in that way, so a Judge Advocate General of the Forces was appointed.

In England the Judge Advocate General has always been a civilian with a staff made up of members of the Army and the Air Force.

The Navy has an entirely different disciplinary system, and the chief legal advisor in the Navy is the Judge Advocate of the Fleet.

Recently, England has made a very material change in this set-up.

All the general work of the Judge Advocate General, such as claims and patents, has been taken away and is looked after by the legal branches of the various services.

There is a legal branch in the Army and one in the Air Force.

These legal branches advise on all pretrial matters, doing everything up to and including prosecuting.

The Judge Advocate General is now known as the Chief Judge Marshal.

He is a purely judicial officer.

He has a staff, the members of which sit on courts martial like your law members, but they differ from the law member or judge advocate, as we have always called them, in that they are, in essence, judges and the members of the court.

The officers who are on the court are, in essence, a jury.

The Judge Marshal is in the same position as a judge trying a criminal case with a jury.

He rules on the law and sums up the facts.

That is the position in England.

In Canada, we had no Judge Advocate General until the first world war.

Before that time, many of the senior officers in the Canadian Forces were from the United Kingdom, and referred legal matters either back to the Judge Advocate General there, or to the civilian law officers of the Crown in Canada.

The work became too heavy for this system to continue, so a Judge Advocate General was appointed and given a staff.

After the war, the Office was continued, but the Office, between 1919 and 1939, consisted of one officer with a couple of clerks.

In the second world war the Office, of course, increased gradually until there were over 400 officers employed in the Office of the Judge Advocate General. Following the war it was cut back again until now we have about 16 officers, 8 from the Army, 6 from the Air Force, and 2 from the Navy.

That is our total staff.

My appointment is Judge Advocate General of the Canadian Forces.

I am assisted by three deputy Judge Advocates General,

one from the Navy captain, one from the Army colonel, and one from the Air Force group captain.

They hold the rank of captain, colonel and group captain, respectively.

We have 7 of our officers stationed across Canada in key centers.

## Notes on "Civil Aviation"

In Halifax we have a Naval officer, in Montreal we have an Army officer, in Trenton, which is our large air base, we have an Air Force officer, and so on across the country.

They act as advisors to all of the services within their area.

They act as judge advocates on all courts, whether in the Army, Navy, or Air Force and they are not carried on the staff of the commander in the area, but on my staff and report directly to me.

The work in our central offices in Ottawa is divided much as is the work in your offices here.

We have our judicial section in which courts martial are reviewed.

We have our claims, patents, pensions and property sections.

The only section of the work that you have to deal with that we do not is procurement.

This is done by another department of the government.

There has recently been enacted by Parliament a new code of law applying to all three services which might be termed a uniform code of military justice.

We have also set up a court, composed of civilian judges, to hear appeals from courts martial.

I understand that the same things have been done here (in the USA).

This system we expect to bring into operation in about two or three months.

We in Canada are therefore faced with many of the same service legal problems that confront you here in the United States and working from different approaches have apparently attempted to solve them in much the same way.

09 September 1949 : Explosion in the Luggage Section of CP owned C-47-DL c/n: 4518 - conversion to a civil DC-3C, the aircraft was registered CF-CUA on February 6, 1947 and assigned fleet number 280 & reg CF-CUA) , At Murder trial of Jewler J. Albert Guay on 08 March 1950 - 3x expert witnesses State that the explosion occurred in the baggage compartment and not by the aircraft operation. 3x Aeronautical Engineers appointed as witnesses for the crown : Frank Francis - C.P.A., David Tennant - Dir. of Air Engineering at T.C.A and Frank Rvenescou ? formerly with T.C.A

### CANADIAN AVIATION - 1951

09 January 1951 : DeHavilland's Hartfield : first production "Comet" aircraft "G-ALYP" flies.

May 1951 : first fare paying flight of a "Comet" aircraft, B.O.A.C flight from London to Johannesburg.

26 November 1951 : Unites States - Aviation Week Vol 55 # 22:

Comet Over the U.S.—Weight and Cost Data

Overseas National Airways believes it could make money flying Comets on U. S- routes.

These figures worked out in cooperation with de Havilland for routes such as New York-Los Angeles or New York-Miami, show why.

Direct Airplane Costs per Hour

Fuel

Airframe maintenance

Engine maintenance

Landing fees

Obsolescence

Insurance

TOTAL

5157.50

. 50.00

. 65.35

. 46.50

9.55

. 50.12

. 27.16

.5406.03

Weight Assumptions

Gross weight (varies with route)

## Notes on "Civil Aviation"

Basic plane svcglit (lbs.)  
Crew of 2 pilots, engineer. 2 stewardesses  
Passenger service  
Payload of 44 passengers and baggage  
Operating weight  
Taxi fuel after landing  
Reserve fuel 45 min. at 1,000 ft  
Fuel for alternate airport 150 min. all legs  
Landing weight, suiiiincr  
Icing allowance .  
Landing weight, winter  
100,000lb.  
51,000lb.  
1,000lb.  
500lb.  
10,000lb.  
62,500lb.  
350lb.  
5,750lb.  
4,000lb.  
72,600 lb.  
1,600lb.  
74,200lb.

CAA Delay Blocks U.S. Test of Comet

Large nonsked, ready to spend \$3 million operating jet transport here, tries to order two planes.

^ But CAA hasn't accepted British certification, so de Havilland sells last three to Air France.

^ And elaborate plans to test craft in various uses must be shelved unless DH expands facilities

Britain's four-jet Comet transport  
could probably be operated at a profit in  
U. S. domestic service, but it may be  
1955 or 1956 before any of the planes  
are available to American customers.  
Tliat's wliat one U. S. airline operator  
found when it undertook an extensive  
study of U. S. jet transport operation.  
Tire company was ready to gamble  
\$3 million to operate two Comets.  
But CAA's delay in accepting the  
Comet's certification resulted in the  
U. S. operator's negotiations for purchase  
being superseded by firm orders  
for three Comets to de Havilland from  
Air France.

Waiting List—Unless DH steps up  
production schedules, the next Comet  
delivery dates available are late in 1955  
or 1956, the prospective U. S. buyer  
was told. Hower'Cr, London observers,  
noting the new Tory government's  
promise to increase British aircraft production  
and dollar earnings, say de  
Havilland might be encouraged to expand  
facilities and try to sell the Comet in this country at an earlier date.  
Just as in the case of air coach service  
it is a nonsked which is ready to pioneer  
the new field.

## Notes on "Civil Aviation"

The operator, Overseas National Airways, largest U. S. nonscheduled airline with a C.A.B exemption, was negotiating with de Havilland this month for two Comets with spares and equipment at a price of less than \$3 million. ONA figured it would cost \$3 million by the time the plane was earning revenue. But ONA could not clinch the deal because C.A.B. refused to accept the British certification of the plane. Then while negotiations were awaiting possible change of the C.A.B. attitude. Overseas National president George Tompkins received a cable from de Havilland informing him of sale of the last three available Comets, followed by a letter which said:

Strong Demand—"Owing to delay in (CAA) acceptance of the Comet's certification we have had to accept a firm order for the last two Series I (Gloster engine) aircraft that had been laid down, and also one additional one (all from Air France), and already we have further strong enquiries for Series I's, which we shall be unable to complete. We dare not continue further with Series I Comets, since to do so would affect deliveries already promised for Series H's (Avon engines).

"I know that you will appreciate our position, and that you will understand it is necessary for us to decide on our future programme at a much earlier date than would be possible if we awaited CAA's decision."

In the same letter the de Havilland official made observations about the politics involved in the proposed transport sales to U. S. airlines:

Sound Sense—"We cannot get over is making an aircraft available for prototype testing by CAA- We cannot expect BOAC to fall over themselves to help us introduce the Comet into service with their American competitors, for there is a school of thought there that claims that BOAC can eventually earn more dollars operating their Comets than could be gained by selling them to American operators.

"There is sound enough sense in this argument which rather weakens our claim that dollar sales of aircraft should take priority over any other business.

"As I said in my last letter we are fully appreciative of C.A.A.'s responsibility to the public and to Congress, and

we can quite understand the official point of view. The characteristics you mention are, I assure you, completely correct. An earlier de Havilland letter to Tompkins dated Oct- 11 revealed more of the de Havilland position regarding U. S. sales possibilities and the politico problems involved;

CAA vs. ARB—"You know" certainly maneuvered extremely skillfully, even to the extent of invoking what we know in this country as the 'prototype bill' ... I never - . . . thought it did not exclude foreign aircraft.

"During all the time that has elapsed since the war, this country has been relying mainly on the American manufacturers to supply their transport aircraft.

The British Air Registration

Board has accepted, 'carte blanche' the CAA certification of American aircraft and . . . feel very strongly that they are an equally competent body to judge airworthiness of an aircraft - . . . and that the American authorities should recognize their competence in the same way as we recognize theirs.

"Naturally the CAA will want to know more detail about the requirements for British jet transports, but we do feel that the US-CAA could obtain these from our Air Registration Board and that they should be a . . . However, there is no unwillingness on our part as manufacturers to submit to CAA evaluation trials. . . . Our difficulty has been that we have not got the flying or technical staff to deal with such further tests and requirements. Also, above all, there is no aircraft available to undergo such tests. . . .

BOAC Ready—"No. one Prototype is a very different aircraft to the production model. . . No. two prototype still remains in the hands of BOAC. . . .

"In the meantime, BOAC are clamouring to start regular services with their own aircraft. . . . Regular scheduled runs start early in the new

"After April BOAC will be extending the routes on which the Comet will operate as quickly as they can get deliveries of aircraft and these extensions are fully planned up till August, 1952, and can only be operated if we keep to our delivery programme."

As to U. S. sales of the Series II

-Avon-powered long-range Comets, an earlier de Havilland letter, dated Aug.

15, stated:

"On the present production programme the earliest delivery of Series II aircraft would be April, 1955."  
Could Exploit Lead—While these correspondents indicate that de Havilland has apparently made no real effort to sell Series I Comets in the U- S., the company says, "There is nothing we should like better than to pour Comets into the United States market . . . given the production facilities to do so, in other words, a relaxation from the needs of rearmament, we could exploit our lead in a big way during the next few years. We indeed hope that we shall still find a good market in your country with the Series II. . . ,"

Plan to Pioneer- President 'Tompkins of nonscheduled Overseas National Airways believes he can make money on his \$3-million gamble in buying two Comet jet transports. He believes his pioneer operation would lead the way for the scheduled airlines just as nonscheduled airlines have also led the way for the scheduled airlines in aircraft. Tompkins' gamble in buying jet transports for U.S. operation is planned to pay off in any of several ways:

- Flying U.S. trunk routes.
- Prestige to Overseas National name and conventional DC-4 service.
- Lease Comets to scheduled airlines.

Tompkins, for instance, is a close personal friend of National Airlines President G. T. Baker, who has long vowed he would lose to scalp competitor Eastern Air Lines on the New York-Miami trunk jet transport service. PanAm and TWA might also be interested—to enable them to meet British-French jet competition.

- Lease operation for Air Force.
- Prototype testing contract for Civil Aeronautics Administration. CAA has sought congressional money to test a B-45 jet bomber on "simulated transport operations" to learn about airways, airports and aircraft operations of the coming jet era. CAA Administrator Charles H. Home and Commerce Undersecretary Delos Rentschler last month cooperated with Tompkins to try to speed it with Tompkins' Comets but the idea came up too late in session for Congress. In short, Tompkins is confident the

## Notes on "Civil Aviation"

American operator with the only proven jet transports available could lease them or operate contract service even if difficulties arose on his own planned domestic trunk operations. He might resell them back to the British or to Air France, both of whom have less Comets than they would like to have. But most of all. Overseas National studies with de Havilland indicated O.N.A. could make money operating Comets itself. U. S. Route Pattern for Comet—In cooperation with de Havilland. Overseas National worked out a U.S. pattern especially featuring New York-Los Angeles via Tulsa and New York-Miami. These Overseas National studies, since used by Air Transport Assn. also, show that the Comet may operate at a much lower cost than the Boeing Stratocruiser. Estimates show direct flight cost of 51.03 a mile or \$464-15 an hour on the New York-Los Angeles. Most extensive research was done on the longest-stage route contemplated—New York-San Francisco via Tulsa—because if fuel requirements were met on that, the shorter stages would be easy. New York-Miami was carefully studied, too, because of the likely attraction of the Comet for super-service on that lucrative run. New York-San Francisco block-totally time via Tulsa comes to six hours and 45 minutes. New York-Miami service would take two hours. 41 minutes. Overseas National has planned, if it could get the Comet, to get high utilization by flying combinations of these route schedules; New York-Miami; Miami-Houston; Houston-Los Angeles; Los Angeles-New York-New York-San Francisco. Study of the routes planned indicates the Comet can carry full 10,000-lb. payload with required fuel reserve for alternate airports and holding patterns. Only Tulsa airport is marginal on takeoff if high headwinds are anticipated on a flight to San Francisco (n. 460 miles) and airport temperature is over 90 deg. Then the plane's rocket engine might be needed to assist takeoff. Chicago is not considered as the westbound runway is too short for routine Comet take off. Cost to Fly Comet in U.S.—Direct flight cost to operate the four-jet Comet

on transcontinental and New York-Miami routes is shown in table on p. 14. Here is how Overseas National Airways estimated these costs, with help of de Havilland aircraft.

- Fuel \$157.50 per hour. Stage length round trip 7,415 miles: fuel 132.87 lbs. or 19,775 gal.; round trip time 15 hours, 51 min.; consumption 1,050 gal. per hour; times 15 cents per gal. for kerosene equals \$157.50 fuel cost per flight hour.

- Crew \$46.50. Anticipating Line Pilots' demands for jet transport crew pay. Overseas National used the same pay and distance formula now used on the DC-6. Pilot pay of \$17.50 an hour was figured, comparing with ON's pay of \$10.00 an hour for C-54 flying. Other crew increases are similarly figured: co-pilot \$12.50; engineer \$8.50 and two stewardesses \$8.00, making total crew \$46.50 an hour.

- Maintenance of airframe \$50.00. With little airframe maintenance data available yet for the Comet, ONA uses the DC-46 estimate of about \$50 an hour.

- Engines \$64.35. This is taken from de Havilland "Report on Fixed Hourly Running Costs of the de Havilland Ghost 50 Civil Turbojet Engine Plant." But ON then increases it for higher U.S. pay scales and for line mechanic inefficiency compared with de Havilland. Life cycle of 375 hours is used including No. 2 inspection, which is kept anticipating CAA requirements although it has been dropped by de Havilland. Line maintenance cost is figured at \$25.52 per hour; overhaul cost at \$3,500 per engine or \$14,000 for 375 flying hours equals \$37.33 per hour; shipping cost is \$2.50 per hour, making total of \$65.36 per hour.

- Obsolescence \$50.12. ON figures a life of eight years with 20% residual value, making total of \$50.12 per hour depreciation. ON holds that the Comet may be another DC-3 of long useful life, in that it is the first modern plane of an era and most simple in design; while later jets five or more years from now may be more efficient, they will be costlier and more complex.

These are preliminary estimates made in ON's top Secret Transport Section. official, after visiting de Havilland has



## Notes on "Civil Aviation"

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n-ith simikir toificusions. p.titv dr.mn  
from the Overseas National studs- as-ail-  
•tble at de Havilland.

.About Overseas Natioiml-l )N \ is  
ciirrenth flying its five DC-4s exclusively ...sively  
on the Pacific airlift under MATS  
charter, at a low figure of under \$1-20  
a plane mile. It believes it has the  
lowest charter cost of any Pacific lift  
carrier. It has been on the lift since  
its start and is the largest nonsked to  
get an individual exemption from CAB.

November 1951 - Aircraft developments:

The latest version of the "Norseman" the Norseman Mk. VII is available from the Canadian Car and Foundry, Montreal. Featuring all-metal wings and a re-designed "Slab-sided" fuselage. Lighter than the former wood and fabric models. Wing area is 369 sq.ft (compared to the previous 325 sq.ft wing) Span is 51ft 8in. fuselage lengthened by 2 ft to 36ft-4in. gross wt remains at 7400 lbs empty weight is up from 4250 to 4482 lbs. engine remains the 550 hp P&W R-1340-AN-1

The SARO Princess flying boat has been rolled out at the Saunders-Roe plant. Isle of Wight. featuring retractable tip floats. ten 3,500-hp. Bristol Proteus turboprop engines. When complete, the flying boat will weigh about 140 tons and will carry more than 105 passengers at a cruising speed of 380 mph. pressurized multi-decked hull - Three Princesses were to be built.

November 1951 - US labour market news : Labor Force Must Double in '52 Shortages showing up in iinskillletl categories as well as skilled: engineer situation critical.

Despite Die large increase in aircraft  
cniplonnicnt that already lias taken  
place since Korea, tlic industry will  
liave to iiiiorc than double its labor  
force by tlie end of next year if it is  
to meet planned production goals,  
'llicat is tlic forecast of Director  
Robert C. Goodwin of tlic Bureau of  
Einpioyinciit Security in a special report  
on manpower and partial mobilization  
issued by the U. S. Department  
of Labor.

During the first year after Kore.i,  
liic number of aircraft workers zoomed  
from '%.000 to 447,600. By the end  
of 1952, Goodwill estimates' than an  
additional 600,000 will be needed. jNot  
all of them will have to be rcxTiiited  
and hired by aircraft companies. Main  
will siin ^ ily shift from one kind iif work  
placed ill plants now engaged in imtoniobile,  
electrk-a! or some other kind  
of prodiiition. During the war more  
than two iiiillirm workers were in aircraft.  
Wiat Is Needed—. \ September survey  
by BKS showed that most of the  
aircraft manpower .shortages arc in  
lughly-.skilled talniical workers needed  
in planning and designing, laitcr sur-  
\cys disclosed shortages also beginning

to show up in ordinary production workers. Other shortages:

- Engineers. BKS found the "most persistently unsatisfied demand" in aircraft is for engineers of all types- mechanical, aeronautical, electrical, electronic, industrial and others. • Technicians. Hard to find also are workers with skills needed in getting ready for mass production-draftsmen, tool and die makers, designers, production planners, tool designers, radar and electronic technicians, template makers and stress analysts.
- Mechanics. Expansion in the industry is expected to intensify the shortage of aircraft mechanics, aircraft and engine mechanics and aircraft assembly mechanics.

Hiring standards are being relaxed in aircraft as a result of the inability to find enough qualified workers, BKS learned. Age restrictions are being relaxed; experience and physical requirements are becoming less rigid.

Other steps being taken to alleviate labor shortage include an increase in training, luring of women, lengthening of working hours and starting second and third shifts.

The labor market here is how the labor market snipes up in minor centers of aircraft production

- Shortage. Wichita, Hartford, San Diego and Phoenix are so called "labor shortage areas."
- Balanced supply. Seattle, Dallas, South Bend, Detroit and Baltimore are areas of "balanced labor supply."
- Moderate surplus. Los Angeles, Fort Worth and Patterson, N. J., have a "moderate labor surplus."
- Substantial surplus. New York City is the only center in this category.

## CANADIAN AVIATION - 1952

### 05 January 1952 :

*Canada Gazette* : Aircraft Mechanic, Grade 1. Department of Transport, Edmonton, Alta. \$214-9242 per month.

Open to qualified male residents of the Edmonton Air Services District (which consists of the Province of Alberta, the Northwest Territories west of the 110th meridian, Yukon Territory and that part of British Columbia north and east of a line ten miles west of the Alaska Highway).

Qualifications:

1. High school education;
2. At least five years of experience in the maintenance and repair of aircraft and aircraft engines;
3. Personal suitability and satisfactory physical condition conforming to the requirements for a Private Pilot's Licence;
4. Possession of an Air Engineer's Certificate endorsed in categories "A" and "C" or
5. Possession of the new Aircraft Maintenance Engineers "M" licence under Category "A" for at least one of the following aircraft;
  - A. Douglas DC-3;
  - B. Lockheed 1848. 10-A or 12-A;
  - C. Beechcraft C-18-vS or D-17-S;
  - D. Avro Anson V ;
  - E. DeHavilland DHC-2.

### August 1952 :

A.V. Roe UK prototype Avro 698 first flight. Initially called the "Ottawa" Vulcan

09 April 1952 : de Havilland DH106 "Comet" four-engined jet transport enters service. de Havilland Ghost 50 Mark I

December 1952 : Canadair, Ltd. was anxious to try out one of its Sabres (CL-13B "Sabre" Mk.6) powered with an Avro Orenda engine ( US Newsweek 1955 refers to Canadair Canada produced more than 1,200 of North American Aviation's Sabrejets modified to take the "British Orenda engine").

## CANADIAN AVIATION - 1953

### 29 May 1953 :

the first of two de Havilland DH106 "Comet" four-engined jet transports purchased by the RCAF is flown from the UK to Canada. These were the first jet transports to be used on trans-Atlantic service.

2 May 1953 :

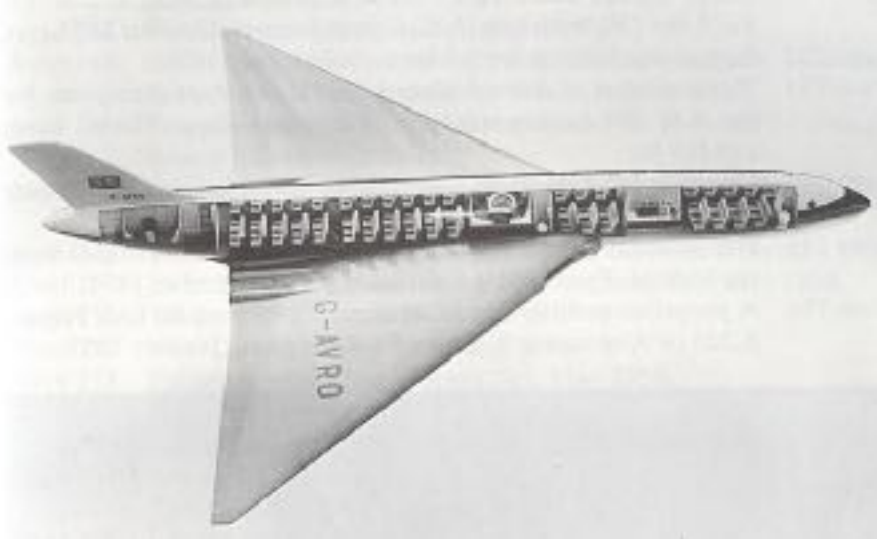
Comet "G-ALYV" c/n 06008 operating as BOAC Flight 783/057 structural failure shortly after takeoff from Calcutta, India while climbing to cruising altitude. The 6 crew and 37 passengers onboard are killed. BOAC LHR - SIN route 1953  
London to Delhi to (1297 km) Calcutta to Rangoon to Bangkok to Singapore to Bangkok to Rangoon to Calcutta to (1297 km)  
Delhi to London. Weather is suspected as the cause

June 1953 : Queen Elizabeth, the Queen Mother and Princess Margaret fly in a Comet - special flight

16 June 1953 : the second RCAF de Havilland DH106 "Comet" jet transport is flown from the UK to Canada.

1953 : Buses represented close to 7 per cent of passenger travel, airplanes 3 per cent.

1953 : Avro "Atlantic" Jet transport announced.



#### CANADIAN AVIATION - 1954

10 January 1954 : Comet G-ALYP, 1452 km Rome-London, 27,000 feet. The Comet descended and crashed into the sea off the Island of Elba.

April 1954 : Comet G-ALYY disappears near Naples, Italy.

**To find out what caused the fractures which started on the roof**, BOAC donated G-ALYU (3539 TTAF / 1221 cycles) to the Royal Aircraft Establishment (RAE) Farnborough for destructive testing.

1. A massive hydro-static testing tank was built around G-ALYU.
2. The tank and the airframe were filled with water
3. Water was then pumped into and out of the plane to simulate pressurisation cycles.
4. Water was used for testing as it was revealed that the "energy released in the rupture of the cabin fuselage when pressurised with air was the force equivalent to the explosion of a 500 pound bomb in the cabin"

After the equivalent of only 3,000 cycles investigators concluded that the crash had been due to "failure of the pressure vessel" which initiated at the forward ADF "window" in the fuselage crown.

The ADF "windows" in Comet being the apertures in the skin for the flush mounted navigation system aerials, in which a fibreglass panel took the place of the 'glass' window formerly used for taking sun and star sightings on older aircraft types.

The design specification required the supports [doubblers] around the "windows" to be glued [bonded] AND riveted.

"Punch riveting" was used to rivet the supports to the skin, they were not glued.

"Punch riveting" creates an imperfect hole - with micro-fractures in the metal - which can result in fatigue cracks around the rivet hole if not properly cleaned up prior to driving the rivet. the mostly square shape of the airplane's windows concentrated stress around the corners, rather than distributing the stress, as with oval-shaped windows

metal fatigue of the "punch riveted" holes around the ADF window resulted in fatigue cracks from the repeated pressurisation and depressurisation of the aircraft cabin which, undetected, grew large enough to allow the ADF "window" to blow out.

Following the recovery of the wreckage extensive investigation carried out at the Royal Aircraft Establishment (RAE) Farnborough by the Air Accident Investigation Board (AAIB) and it reported to the National Board of Enquiry that the primary cause was a catastrophic failure of the pressure cabin due to metal fatigue. It identified that despite extensive

## Notes on "Civil Aviation"

testing in the design stage, the cyclical pressurisation and de-pressurisation of the fuselage had accelerated the stress levels around the corners of the ADF and some the main passenger windows, causing disastrous fractures in the structure and almost instant failure of the airframe. - <http://www.baesystems.com/en/heritage/de-havilland-comet-1---2>

Comet's pressure cabin had been designed to a safety factor of 2.5xP comfortably in excess of the 1.33x P [and an ultimate load of 2x P, P being the cabin 'Proof' pressure] required by British Civil Airworthiness requirements [BCARs] the accident caused a revision in the estimates of the safe loading strength requirements of airliner pressure cabins.

Recovery of a wreckage from G-ALYP revealed signs of inflight break-up.

1. Shreds of cabin carpet were found trapped in the remains of the Comet's tail section;
2. The imprint of a coin was found on a fuselage panel from the rear of the aircraft; and
3. Smears and scoring on the rear fuselage were tested and found to be consistent to the paint applied to the passenger seats of the Comet.

When most of the wreckage was recovered, investigators found that the sequence of events was:

1. fractures started on the cabin roof,
2. a "window" then smashed into the elevators,
3. the rear fuselage then tore away,
4. the outer wing structure fell, then
5. the outer wing tips broke away and
6. finally the cockpit broke away and
7. fuel from the wings set the debris on fire.

"In every step and progress, we've had to pay for it in blood and in treasure.  
And, God knows that in this case we have paid in full" - Lord Brabazon

The de Havilland company halts production and then redesigns the airplane, producing the Comet 4.

All Comet 1's are withdrawn from service and the production line at Hatfield is halted - <http://www.baesystems.com/en/heritage/de-havilland-comet-1---2>.

1954 :

Boeing has been working on a design project centered around an airframe that could serve both as a jet powered troop transport and tanker military capable of flying fast enough to refuel the new B-52 bomber. Dissemination of the findings of the DH Comet investigation lead Boeing to produce the turbo-jet powered "-80" or "Dash 80" airframe design :

1. the KC-135 flying tanker for service aviation
2. the 707 for civil aviation.

The "707" airframe derivative aircraft:

1. 720,
2. 727, and
3. 737.

1954 : AVRO - working on Avro Atlantic - Delta wing SST

## Notes on "Civil Aviation"

### CANADIAN AVIATION - 1955

"for the purpose of intercepting Soviet bombers" such as the Tupolev Tu-95 Bear intercontinental turboprop bomber. The design results in the creation of the AV.Roe Arrow.

**March 1955 :** Orenda Engines, Ltd. 6,000 employees, has turned out over 1,500 Canadian-designed and built Orenda jet power units for Canadian Sabre jets.

**28 October 1955 :**

The Council of ICAO convene a diplomatic conference at The Hague, Belgium with the following protocol : to Amend the Convention for the Unification of Certain Rules Relating to International Carriage by Air Signed at Warsaw on 12 October 1929 in English, French and Spanish with being of equal authenticity.

1955, the Canadian federations followed suit the next year by uniting in the [Canadian Labour Congress](#) (CLC). At that point, 70 percent of all Canadian unionists belonged to international unions with headquarters in the United States.<sup>283</sup>

### CANADIAN AVIATION - 1956

September 1956 :

**Four RCAF pilots led by John McElroy flying Canadair CF-86 with Orenda engines intercept "The Beast" & inadvertently bring down a U-2 spy plane piloted by Howard Carey.**

The Mark 6 Canadair CF-86 Sabres, equipped with Orenda jet engines, could fly up to 50,000 feet at 0.92 Mach.

1956 : UK : A.I.D headed by Director, Mr R. E. Swift (appointed in 1950), grouped with other inspectorates of the Ministry of Supply under a Director- General of Inspection and a Board of Inspection which rationalized the procedures of the several UK Government Inspectorates.

### CANADIAN AVIATION - 1957

**October 1957 :**

Sputnik I is launched from Baikonur, Soviet Russia.

**1957 :**

Canadian Government re-organisation - "Elites" elevated, non "Elites" removed.

- "Air Engineers" seen as "NON Elites" while those "Engineers" (and graduated from a University) within the Transportation Ministry deemed themselves "Elite" -
- Ref to "Vertical Mosaic: An Analysis of Social Class and Power in Canada" by John Porter.

### CANADIAN AVIATION - 1958

The Comet 4 entered service in 1958 followed a few weeks later by the Boeing 707.

04 October 1958 : 1st of the new Comet 4's "G-APDB" enters commercial service with B.O.A.C. the use of "George" in the call-sign refers to King George V. The elegant Lockheed Constellation, used by TWA and others, could make 340mph at best, while the two-decked Stratocruiser cruised at 300 mph. Jets promised speeds of 500mph-plus.

In 1958, Britain, smarting from Suez but not yet wholly resigned to post-imperial mediocrity, still believed in pulling off the odd first. That was the atmosphere of the time when the four Avon turbojets of G-APDB sprang into life. BOAC had decided to pull a fast one on Pan-American, its brash US rival.

<sup>283</sup> <https://www.britannica.com/topic/organized-labor/The-United-States-and-Canada#ref540199>

## Notes on "Civil Aviation"

Pan-Am had been promising that it would be the first airline to mount "pure" turbojet services across the Atlantic with its newly-delivered Boeing 707s. They were due to depart from Paris and Rome for New York on October 27, with operations from London starting on November 14. Sir Gerard d'Erlanger, chairman of BOAC, thought differently. On October 3, BOAC issued a sudden announcement. The New York Port Authority, which governed flights into the city, had given the British airline permission to begin jet operations. The next day, two new Comet IVs would inaugurate its transatlantic service. One would take off from London and refuel at the Canadian staging post of Gander on Newfoundland before carrying on to New York. A second aircraft would fly from New York's Idlewild Airport (renamed John F Kennedy International Airport in December 1963) to London. The east-bound Comet, aided by strong tailwinds, would not require refuelling, making the journey in one hop. A flustered Pan American issued a press release questioning the Comet's ability to mount a viable service. Basil Smallpiece, managing director of BOAC, dismissed the claim in invincibly British style as "rather poor sportsmanship".

The westbound Comet left London at 8.45am and took 10 hours, 22 minutes to reach Idlewild, including the stop at Gander.

The eastbound Comet reached London in a record-breaking six hours, 11 minutes.

B.O.A.C passengers had a choice of 2 classes:

1. Deluxe, with seats spaced at 56 inches apart, cost £173 one-way (£2,914 in today's money), or
2. 1st, with seats spaced at ?? inches apart, cost £173 one-way (£2,914 in today's money)

31 March 1974 : British Airways forms when BOAC and BEA combine

- <http://www.telegraph.co.uk/travel/3166768/Transatlantic-travel-Flying-back-to-the-Fifties.html>

### 25 Mar 1958 :

A.V. Roe Canada - AVRO CF-105 "Arrow" first test flight, Malton Ontario

30 July 1958 : 1958: first flight of the de Havilland DHC-4 Caribou CF-KTK-X, on 30 July 1958. Crew: George Neal, Hans Brinkman and Dave Fairbanks at Downsview ON.

### 20 September 1958:

Avro "Ottawa" (Vulcan) prototype VX770 suffers catastrophic wing failure on a flight to test its Conway engines - at the end of the test flight the Vulcan was allowed to make a fly-past at the "Battle of Britain At Home" air display over RAF Syerston, UK. As the aircraft passed the Control Tower at a height of 250 feet and at a speed of 350 knots it pulled up in a shallow climb and began to roll to starboard. At this point a "kink" was seen to appear in the leading edge of the starboard wing which then began to break up, the aircraft shedding the wing and crashing in a near vertical dive. All four crew members were killed as were three runway controllers on the ground.

an air show.

### 23 September 1958 :

Prime Minister John Diefenbaker announces in the House of Commons <sup>284</sup>

"the number of supersonic interceptor aircraft required for the RCAF air defence command will be substantially less than could have been foreseen a few years ago,  
in fact such aircraft will [not] be required at all in the 1960's in view of the rapid strides being made in missiles by both the United States and the U.S.S.R.

The development of the Canadian supersonic interceptor aircraft the CF-105 or the "Arrow" was commenced in 1953 and even under the best of circumstances it will not be available for effective use in squadrons until late in 1961.

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<sup>284</sup> Hansard, Parliament of Canada, September 23rd, 1958

## Notes on "Civil Aviation"

Since the project began, *revolutionary* changes have taken place which have made necessary a review of the program in light of the anticipated conditions when the aircraft comes into use."

1958 : Secretary of the UK Air Registration Board Sir Robert Hardingham visits Australia's Aeronautical Research Laboratories - Melbourne, and meets with Principal research scientist Dr David Ronald De Mey Warren (invited to join the technical committee investigating two fatal De Havilland Comet jetliner crashes in 1953 and begins developing an idea for an in-flight recording device. - Pilots rejected the concept, fearing that black boxes might be used to spy on crew) ; Enthralled with the idea, Hardingham brought Warren and his prototype "ARL Flight Memory Unit" - which allowed the storage of up to four hours of voice and flight-instrument data back to London and after a resounding response to demonstrations of the prototype a company was contracted to make the devices - which have always been coloured red. Australia became the first country to make flight recorders a mandatory legal requirement in 1963. While millions of "Black Boxes" have been made and sold worldwide, Dr. Warren, a PhD in chemical engineering from his research into rocket fuel, never received a penny for his invention. <sup>285</sup>

1958 : Canada : resolution adopted providing for "simultaneous translation" in the House of Commons. Hansard

1957-1958 :

*Lionel McCaffrey (LAC - RCAF) builds a full scale replica of the Silver Dart at RCAF Trenton.*

A ticket from London to New York on a BOAC Comet 3-4 in 1957 costs the equivalent of \$3,561 in 2017 \$.

1958 the US National Aeronautics and Space Act creates the National Aeronautics and Space Administration (NASA). NASA is specifically under the ACT to "provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof." as the director of NASA's Technology Utilization office noted in 1963, "In this age of automation, there is nothing automatic about the transfer of knowledge or the application of an idea to practical use. Src NASA SP-4216

1958 - the last edition of the Canada Year Book is published.

Statistics Canada will continue through other means to keep Canadians informed about their social and economic life.

### CANADIAN AVIATION - 1959

1959 : The Douglas DC-8 enters service.

1959 : UK - Until about 1959, the standard pattern of a City and Guilds course was a continuous 4 or 5 year syllabus divided into 2 parts. the first part a 2 or 3 year course leading to an intermediate certificate followed by an additional 2 year course leading to a "Final" Certificate. In some cases, a further year or more could be spent in gaining "Full Technological" certificate (FTC) which could lead to higher National Certificate studies. It was found however that the Final and Full technological certificates represented levels of achievement which very few "Craft" students attained. Usually those who did so became "Technicians or Managers". The majority who became competent journeymen took 4 or 5 years to gain an intermediate, which proved adequate for their needs... On the other hand, the more able students found Craft courses to easy at the beginning and could have started earlier on the more scientific and mathematical studies needed by technicians. The distinction between craft and technician levels in the City and Guilds was not clear. Since 1951, the craft "schemes" (Programmes) have been re-cast to bring them in-line with the needs of apprentices likely to become competent craftsmen, and the new technician courses which are separate from the craft courses from the start - introduced were the 2 in Aeronautical Practice (Nos. 332-333) and 2 in Aeronautical Engineering (Nos. 171, 175. 371 being added in 1969)<sup>286</sup>

<sup>285</sup> IMPERIAL - the magazine of Imperial College London - spring/summer issue, 2011

<sup>286</sup> A. J. Peters : British Further Education: A Critical Textbook pp 90-93 : Elsevier, May 16, 2014



## Notes on "Civil Aviation"

note : Great Britain's "system of further education" was defined by statute law.

16 January 1959 :

Canada : first session of the House of Commons to be simultaneously translated (Hansard)

20 Feb 1959 :

Canadian Government (Diefenbaker) terminates the Avro Cf-105 (Arrow) contracts.

23 Feb 1959 :

Wing Cmdr. Paul Hartman RCAF flies *McCaffrey's* Silver Dart replica at Baddeck, NS in front of the Hon. J.A.D. McCurdy honorary Air Commodore, RCAF, commemorating the 50th Anniversary of Powered Flight in Canada. A Silver Dart, flying replica was built by RCAF volunteers, in Trenton in 1958 and flown from an iced Baddeck Bay to replicate, and commemorate, the original 1909 flight's 50th anniversary. Unfortunately, shortly after the replica's plane's take-off, it crashed, due to prevailing turbulent wind conditions. It was later repaired and then donated to the Canada Aviation Museum.

1959 : UK : Ministry of Aviation was created. The A.I.D, together with the Electrical Inspection Directorate, becomes part of the Ministry of Aviation (the other inspectorates were transferred to the UK War Office). A joint War Office / Ministry of Aviation Inspection Committee is formed to co-ordinate A.I.D work.

Royal Air Force Halton - 84th Entry. <http://www.rushenhistory.com/brat/Brat.htm>

Pass GCE' "O" (ordinary) levels at the Chelmsford "Technical School" ( Age 15) for entrance.

An apprenticeship in the Royal Air Force meant completing three years of Training at the RAF Technical School,

General Theory and Aeronautical Theory :

Mathematics : calculus

Chemistry : single cylinder engines to check out the octane rating of fuels using iso octane and normal heptane.

Physics : Determine the Indicated Mean Effective Pressure in a cylinder,

Mechanical Engineering Theory:

Mechanical Engineering Laboratory :

use Izod and Brinell testers to learn about the properties of different materials.

using a Froude Dynamometer on a V-6 or V-8

measure the Indicated Horse Power

measure the Brake Horse Power

Aeronautical Theory :

riggers : theory of flight

Engine Fitters : thermodynamics.

Rover Gas Turbine engine

gas flow and nozzle velocities.

In the "Practical" workshop -

intricacies of the following Piston engines, associated systems and propellers.

1. Gipsy Major,
2. Armstrong Siddley Cheetah to the mighty
3. Merlin and
4. Bristol Hercules 100 and associated systems

intricacies of the following Gas turbine engines, associated systems and propellers.

1. Rolls Royce Nene,
2. Avon 100 ,
3. Sapphire.

the final hurdle, airfield phase with "live" aeroplanes and then final exams.

## Notes on "Civil Aviation"

The final "airfield phase" at the end of the 3rd year:  
Working with "live" aeroplanes that could kill you  
Engine runs in the Beaufighter cockpit classroom,  
aircraft marshalling, servicing, etc.

Final Exams:

1. GCE "A" (Advanced) levels: Canadian Equivalent =
2. "City and Guilds (of London) exams in Aeronautical Engineering Practice" (Trades persons practical testing)
3. Ordinary National Certificate in Mechanical Engineering (is this what enabled them to later become Ground Engineers ??)
4. RAF oral / practical (?) exam
5. to become Junior Technicians to be able to wear the coveted upside down stripe.
6. Assigned to Aircraft Servicing Flight carrying out Minor (Line) servicing and Major (Overhaul) servicing.

The Aircraft Servicing Form was the RAF Form 700.

(1961) "Research Reports and Memoranda", Aircraft Engineering and Aerospace Technology, Vol. 33 Iss: 2, pp.57 - 57  
NaMAEO's - Under this heading are published regularly abstracts of all Reports and Memoranda of the Aeronautical Research Council, Technical Reports and Translations of the United States National Aeronautics and Space Administration and publications of other similar Research Bodies as issued.

Labour gazette January-June 1959 - Air Engineer reference :

### CANADIAN AVIATION - 1960

1960 : UK AID a part of the Ministry of Aviation - Inspection Division, the technical and professional staff = 903.  
Nimonic alloys, now various titanium alloys and hints of even more exotic metals to come; and, in non-metallics, the plastics and other synthetic materials, some of which are assuming importance as primary structural materials.  
All these have inspired new advances in inspection and quality control techniques.

The AID is now involved in close contact with the design authority and contractor from the early days of any project, the better to formulate inspection needs before the production stage is reached. AID laboratories actively contribute to technical advances—a recent instance was the devising of an optical method of measuring accurately the wall thickness of hollow, air-cooled turbine blades.(1963) Techniques of quality control pioneered by the AID are finding their way out of aeronautics and into the mass-production industries. There is a continuing emphasis on proving component lives, in terms of a mean functioning time between failures, to ensure designed operating lives. Automation is an accomplished fact, with pre-programmed machining and fabricating processes becoming daily more common.  
In all these the AID is concerned.

**April 1960 :**

*ICAO adopts a "Multilateral Agreement" Relating to Certificates of Airworthiness for Imported Aircraft*

1960 :

When the Canadian Bill of Rights<sup>39</sup> was enacted in 1960, it offered tremendous scope for review of military action by the civil courts, that is, if they had been willing to take up the gauntlet.

At the court-martial level, military lawyers cited the Bill of Rights on numerous occasions, but with little success. Only four Bill of Rights cases were heard by the Court Martial Appeal Court; all were denied except one, which was decided on other grounds. Only one of these cases, *MacKay v. The Queen* ((1980), [1980] 2 S.C.R. 370, 114 D.L.R. (3d) 393 [hereinafter cited

## Notes on "Civil Aviation"

to D.L.R.).) was appealed to the Supreme Court of Canada. It was decided in 1980, twenty years after the Bill of Rights was enacted.

The three cases prior to MacKay raised very specific issues in which the accused argued that a certain provision of the QR & Os violated the Bill of Rights.

In *Platt v. The Queen*,<sup>43</sup> the accused challenged article 111.60 of QR & Os, which states that a person charged is not entitled to have a defending officer appointed until after a court martial has been ordered by the convening authority.

The Court Martial Appeal Court rejected Platt's claim that the article violated his right to counsel as provided by section 2(c) of the Bill of Rights.<sup>42</sup>

The two cases that followed, *Robinson v. The Queen* (1971)<sup>43</sup> and *Nye v. The Queen* (1972),<sup>44</sup> both challenged article 112.54(3) of QR & Os.

A General or Disciplinary Court Martial<sup>45</sup> is composed of military officers who have minimal legal training. A Judge Advocate is appointed to assist the court martial and to give an opinion upon all matters of law and procedure. QR & Os, article 112.54(3) allows the court to disregard the opinion of the Judge Advocate when it has "very weighty reasons" for so doing. In both *Robinson* and *Nye*, the court martial disregarded the legal opinion of the Judge Advocate on a matter of law. In both cases, it was argued that article 112.54(3) denies the accused a fair trial according to law, and denies the right to equality before the law, and due process of law.<sup>48</sup> Therefore, it was submitted, the accused was denied the right to a hearing in accordance with the principles of fundamental justice pursuant to the Bill of Rights.

In *Robinson*, the appeal was allowed on other grounds; however, the Court Martial Appeal Court implied that it would favour a Bill of Rights challenge to article 112.54(3) if the matter arose in the future. When the issue was raised again in *Nye v. The Queen*, the Court Martial Appeal Court held that article 112.54(3) did not infringe the Bill of Rights.

Under that provision, the members of the court martial could only disregard the opinion of the Judge Advocate on a question of law when they had been convinced that his or her opinion was ill-founded. Therefore, according to the Appeal Court, the accused was not denied due process of law and fundamental justice.

*MacKay v. The Queen* (1980) <sup>50</sup> was the only major challenge to the military system under the Canadian Bill of Rights. In that case, Private MacKay was charged with trafficking in drugs under the Narcotic Control Act.<sup>51</sup> He was suspected of selling marijuana to fellow soldiers on his base located at Esquimalt, British Columbia. The offence was brought under the Code of Service Discipline, pursuant to section 120 of the National Defence Act.<sup>52</sup> MacKay was convicted by a Standing Court Martial on a number of counts and was sentenced to sixty days' detention. On appeal to the Court Martial Appeal Court, all but one of the convictions was affirmed.

Private MacKay appealed to the Supreme Court of Canada.

On appeal, the accused argued that section 120 of the National Defence Act was inoperative under the Bill of Rights, in that he was tried under military law for offences under the general law. A civilian would be tried in civil court for the same offences.<sup>53</sup> Therefore, MacKay argued that he was denied equality before the law, pursuant to section 1(b) of the Bill of Rights.<sup>54</sup> In addition, MacKay submitted that section 120 denied members of the Armed Forces the right to a fair hearing by an independent and impartial tribunal as contemplated by section 2(f) of the Bill of Rights.<sup>55</sup> The Supreme Court dismissed MacKay's appeal by a majority of seven to two.

Ritchie J. delivered the majority opinion. He pointed out that the National Defence Act was enacted by Parliament under section 91(7) of the British North America Act, 1867 (now the Constitution Act, 1867). That section gives Parliament the authority to enact legislation to control behaviour and discipline in the Forces and to establish courts to enforce this legislation. In reiterating the 'valid federal objective' test,<sup>57</sup> Ritchie J. held that legislation that deals with a particular class of people does not offend the Canadian Bill of Rights if, as here, the legislation had been "enacted for the purpose of achieving a valid federal objective."

In my opinion, the MacKay case was wrongly decided. Ritchie J. does not explain the meaning of a valid federal objective. He appears to have applied a division of powers test and suggested that once the legislation in question is found to be *intra vires* Parliament, it does not violate the Bill of Rights. That being the extent of the inquiry, Ritchie J. does not consider whether a military trial for civil offences serves a valid objective under the provisions of the Bill of Rights.

McIntyre J., in a separate concurring judgment, does attempt to provide some meaning to the valid federal objective test within the context of the Bill of Rights. He states that any departure from the general application of the law "should be countenanced only where necessary for that attainment of desirable social objectives, and then only to the extent necessary in the circumstances to make possible the attainment

## Notes on "Civil Aviation"

of such objectives."

McIntyre J. goes on to hold that in this case, the drug offences were sufficiently related to the service to justify treatment under military law. The offences, except one, occurred on military property and attacked the standards of discipline and efficiency of the service and, therefore, were properly tried by court martial.

While McIntyre J. is to be applauded for developing a meaningful test under the Bill of Rights, one must criticize him for not applying that test. Without proof of the fact, McIntyre J. held that military prosecution of drug offences is necessary to maintain the requisite objective of military discipline. Nevertheless, the test proposed by McIntyre J. is a useful one that attempts to establish an appropriate balance between constitutional rights and the legitimate and necessary interests of the state. This balancing approach in MacKay suggests an appropriate test, to be discussed later, for the application of section 1 of the Charter to constitutional claims.

In regard to the other ground of appeal, Ritchie J. held that a trial by court martial did not deprive an accused of a fair and public hearing by an independent and impartial tribunal. According to the majority, there was no evidence in the record to suggest that the President of the Court Martial acted in anything but an independent and impartial manner. Ritchie J. stated further that the President's experience in the military and his position in the Judge Advocate General's branch suggest that he was well qualified to adjudicate matters of military law.

In deciding a claim under the Canadian Charter of Rights and Freedoms,<sup>65</sup> the court must answer three fundamental questions. First, does the Charter apply?

Second, have any of the rights as guaranteed by the Charter been infringed?

Third, (and this question is probably the most difficult,) is the infringement a reasonable limitation of the person's rights, pursuant to section 1 of the Charter?

A. Does the Charter Apply to Military Law? Section 32(1) of the Charter states that the Charter applies to the Parliament and government of Canada in respect of all matters within the authority of Parliament including all matters relating to the Yukon Territory and Northwest Territories .

This clearly includes the Canadian Armed Forces, which completely falls within the authority of Parliament and the government of Canada.

Section 32(1) is subject to qualification: pursuant to section 33, Parliament may expressly declare in an Act of Parliament that the Act or certain sections of the Act shall operate notwithstanding section 2, and sections 7 through 15 of the Charter. To date, this override power has not been exercised with respect to the National Defence Act.

Until such a declaration takes place, the men and women of the military are protected under the provisions of the Charter. One provision of the Charter, the right to a trial by jury under section 11(f), specifically excludes trials under military law tried before a military tribunal.

In drafting the Charter, therefore, Parliament turned its mind to the military legal system.

In so doing, Parliament chose to deny service personnel only that right guaranteed under section 11 (f) of the Charter.

By implication, Parliament must have intended that the remaining provisions of the Charter would apply to military law.

B. Supremacy Clause: Section 52(1)

Section 52(1) of the Constitution Act, 1982<sup>68</sup> explicitly states that:

The Constitution of Canada is the supreme law of Canada, and any law that is inconsistent with the provisions of the Constitution is, to the extent of the inconsistency, of no force or effect.

The Charter is part of the "Constitution of Canada" <sup>69</sup> and, therefore, any law which is inconsistent with the Charter is "of no force or effect."

This clearly includes the National Defence Act and any other law that applies to the Canadian Forces.

Certainly, section 52(1) refers to the "Constitution of Canada" as a whole, which includes the authority of Parliament to enact legislation governing the military and the limiting provisions of the Charter. Before section 52(1) will apply, the court must not only find that a right or freedom as guaranteed by the Charter has been infringed, but also that the law in question is not a "reasonable limit... as can be demonstrably justified in a free and democratic society," pursuant to section 1 of the Charter. Therefore, any provision of military law that violates the Charter and is not saved by section 1 will be struck down by the civil courts. It will be of "no force or effect" both with respect to the matter before the court and any pending or future actions by the military authorities.

## Notes on "Civil Aviation"

Section 52(1) embodies the previous practice of the civil courts in determining a constitutional matter.  
Once the constitutional validity of the National Defence Act is properly placed in issue, the presiding tribunal must determine the constitutional question before proceeding with the case

### CANADIAN AVIATION - 1961

#### 4 September 1961 :

Canada : first debate in the Senate to be actually be "simultaneously translated" : ref Hansard.  
Translation staff consists of a total of seven translator-interpreters.

### CANADIAN AVIATION - 1962

### CANADIAN AVIATION - 1963

### CANADIAN AVIATION - 1964

#### spring 1964 :

military flying ceases at Rockcliffe.

The National Aeronautical Collection officially created, bringing together at Rockcliffe every artifact now in the hands of the Canadian War Museum, the National Aviation Museum and the RCAF.

When Canadian Aviation Museum finally inaugurated at Rockcliffe 1988, this collection was made available to the public.

Canadian Forces Administrative Order 27-5 contains a mission statement for DND military museums "to preserve and interpret Canadian military heritage in order to increase a sense of identity and esprit de corps within the Canadian Forces, and to support the goals of the Department of National Defence".

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1964, Hawker-Siddeley Aviation Limited and British Aircraft Corporation (who later merged to form British Aerospace)' emerged as the primary manufacturers of fixed wing aircraft. Bristol-Siddeley and Rolls-Royce remained as engine producers.<sup>80</sup> By 1965, the British government came to the realization that if they wanted to compete with the American aircraft manufacturers, they would have to collaborate with other European countries in forming a collective European aviation industry. (AIRBUS)

1964 : UK RAF : a new "Trade Structure" is introduced. The "single-skill Aircraft Apprentice" is replaced by the Technician Apprentice, to be trained in the four trades of:

## Notes on "Civil Aviation"

1. airframes,
2. propulsion,
3. electrics, and
4. armament.

The new "scheme" (Programme) was also designed to give the Technician Apprentice an "Ordinary National Certificate" in Mechanical Engineering.

The entry numbering sequence continued to follow the earlier Aircraft Apprentice series.

Simultaneous with the introduction of the Technician Apprentice, to meet the RAF's need for skilled craftsmen, the "Craft Apprenticeship" was introduced in the previous single skills, although the course length was reduced to two years and a new series of entry numbers in the 200 series was introduced.

From October 1969, one-year Mechanic Apprentice courses were also introduced, with entry numbers in the 400 series.

### CANADIAN AVIATION - 1965

#### 1 August 1965 :

RCAF "Air Materiel Command" is disbanded - and integrated as "Canadian Forces Materiel Command Headquarters"

#### 1965 :

Air Canada takes out options for purchase on four BAC-Aerospatiale "Concorde" aircraft, the option is subsequently cancelled in 1972.

### CANADIAN AVIATION - 1966

#### 1996 - 1967 :

the UK Civil Aviation Authority (CAA) commissions a review of "airworthiness and quality assurance in the UK aircraft maintenance sector". The findings and recommendations were published as **CAA Paper 97011**.

The review panel was chaired by Professor Roger Wootton, Dean of Engineering at the City University, London.

Wootton's report included a number of issues concerning the training of aircraft maintenance engineers, including Licensed Aircraft Maintenance Engineers (LAMEs).

Whilst European Joint Aviation Requirements (JARs) specify the requirements for experience and knowledge and describe what must be included in "basic" and "aircraft type" training, **there is no standard for the "personal" qualities that L-AMEs should possess to make them *effective* in their role.**<sup>287</sup>

A research project carried out by the UK Aviation Training Association in 2000 has established such a standard in the form of a "competency framework".

This has been validated by LAMEs and industry professionals who have an interest in the competency of L-AMEs".<sup>288</sup>

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<sup>287</sup> Hines, T., "Enabling the Certifying Engineer – An Account of a Research Project Undertaken in 2000," SAE Technical Paper 2001-01-2666, 2001, doi:10.4271/2001-01-2666.

<sup>288</sup> Ibid

## Notes on "Civil Aviation"

### CANADIAN AVIATION - 1967

1967 : Canadian Flight Training activity "to license standards" in 1967 increased 14 percent over 1966;  
5,315 private pilots were trained.  
1,368 commercial pilots were trained.

### CANADIAN AVIATION - 1968

#### 1 Feb 1968 :

The Royal Canadian Navy, Canadian Army and RCAF are "unified" to become the Canadian Armed Forces. With unification comes "common rank, insignia and uniforms", the original uniform, rank and designations of the 3 Services are no longer used. Unification of the forces also harmonises terminology across the 3 services.

1968 : The RCAF is removed from having any control over "Civilian Aviation".

#### 1968 :

UK : Government White paper on "Civil Aviation Policy" :

10. In the Government's view the principal objective of civil aviation policy must be to:

- A. encourage the provision of air services by British carriers, in
- B. satisfaction of all substantial categories of public demand, at
- C. the **lowest levels of charges**
  - A. consistent with a **high standard of safety** and
  - B. **economic return on investment** and
- D. the stability and development of the industry.

11. The principle of the "minimum of restraint" on competition or innovation can, however, be applied only within the limits set by airline economics and the practical realities of international civil aviation.

British civil air transport is an international industry, with well, over 90 per cent of its output on international services.

Here its' competitive strength is crucial , and here it makes its greatest contribution both to the economy and the balance of **payments**.

12. The industry is , and will continue to be, highly regulated throughout the world for a number of reasons.

- 1. First, there is the need for the highest standards of safety and the need to control aircraft noise.
- 2. Second, there is the need for stability and regularity of public transport services.
- 3. Lastly, there is the inescapable fact that international services depend upon a world of agreements reached with, other countries, defining the traffic rights which airlines may enjoy.

The need, therefore, is to operate within this "framework" in such a way as to give the industry the biggest possible opportunities in the expanding world market.

At the same time, however, this framework of regulation can be modified by international bargaining, by both the airlines and the Government. This applies to fares as well as to traffic rights.

Britain's international bargaining power is far from negligible.

13. The Government will incorporate these broad objectives in a policy statement that will be published and made binding upon the future regulatory body, to guide its work over the whole span of its activities.

The rest of this White Paper sets out the Government' s views on the organisational changes that are needed, and the policies that should be applied, in order to reach these objectives.

This more detailed exposition of the ways in which the objectives should be pursued will form the foundation of the policy guidance to the new regulatory body.

The Government accept that it may become necessary to vary parts of this guidance from time to time, to give effect to any changes of emphasis that may be required.

## Notes on "Civil Aviation"

15. The encouragement of - structural changes on the lines now envisaged calls for more purposive regulation of the industry than the present legislation and licensing system permit. The Government accept that the task should be carried out by a Civil Aviation Authority charged by Statute to act in accordance with the objectives and policies laid down in the Government's formal policy statements.

The Civil Aviation Authority will be concerned with the structure of the industry both in its broader terms and, more narrowly, in its decisions on individual routes.

It is the broader structural issues that are the main concern of Government policy.

### Safety and Technical Regulation

90. The Report stresses the inter - relationship between the economic, operational and technical regulation of the industry. All aspects of airline activity have a bearing on the safety of the services provided to the public. Conversely, the achievement of high standards of safety imposes an economic cost which needs to be taken fully into account both in creating the conditions in which airlines can operate profitably and in assessing the ability of an airline to fill a particular role.

The more purposive direction of economic regulation which the Government now intend to adopt will make it more important to take account of these relationships.

The quality of decisions, both about an airline's capacity and performance and about the course of future developments, will be improved if the regulatory authority has the fullest possible knowledge and understanding of all aspects of airline activity.

91. There are close links between the work on operational safety, which is at present the responsibility of the Director General of Safety and Operations, and the work of the National Air Traffic Control Services, which both at present come within the Board of Trade (the latter jointly with the Ministry of Defence).

With technical advance, there are also increasingly close links between the operational safety work at present conducted by the Board of Trade and the work on airworthiness conducted by the Air Registration Board; indeed, the Air Registration Board has recently suggested that there might be a case for combining some of these functions.

The "several" aspects of operational regulation:

- I. the certification of airworthiness,
- II. the rules governing the flying of aircraft ,
- III. the testing of professional competence,
- IV. the assessment of an airline's ability to operate safely, and
- V. the control of aircraft movements -

are interlocking aspects of a single operating environment.

92. For these reasons, the Government accept that:

1. the enhanced economic functions should be carried out, in accordance with a published policy directive, by a regulatory authority outside the normal departmental machinery;
2. that this authority should combine with these functions responsibility for the operational regulation of the industry; and
3. that all the operational and technical functions should be brought together within the same body.

They accept, therefore, that there should be a single Civil Aviation Authority having responsibility for the whole spectrum of economic, operational and technical regulation, including responsibility for airworthiness and for the non-Military aspect of the air traffic control services.

A single body with responsibility over this whole field would be in the best position to form coherent judgments both on the activities of individual airlines and on the developments which will best serve the national interest in this rapidly expanding industry.

93. The Civil Aviation Authority will be able to develop a comprehensive expertise in all aspects of the industry's affairs.

As such, it would be well placed to attract staff of the many professional skills required.

A larger organisation such as this would be able to offer better career prospects to many of its highly skilled and specialised personnel, who would gain the opportunity to broaden their fields of specialisation by moving between areas of work that are at present in separate compartments.

At the same time, as the report points out, there would be a continuity of experience that the Civil Service is less able to guarantee. Provision will be made for some movement of staff between the Authority and Government Departments;

95. In accepting the recommendation that the responsibility for airworthiness should be brought within the Authority, the Government intend no reflection on the Air Registration Board's past performance.



## Notes on “Civil Aviation”

The Board justly enjoys a high regard throughout the world and the Government are anxious that the scope and character of the Board's relations with the manufacturing and operating industries should not be impaired.

The Government will be concerned therefore, to ensure a minimum of disturbance either to the present internal organisation of the Air Registration Board or to the present arrangements for consultations with outside interests .

The Authority will draw on the same sources of advice as are at present available to the A.R.B.

97. In taking over the safety of aircraft operations and responsibility for the civil side of air traffic control, the Authority will acquire certain responsibilities in relation to general aviation and will not be solely concerned with commercial airline operations. The Governments formal statement of policy will include guidance to the Authority in matters affecting aerial work and private flying.

1968 : Canadian Federal election gave Pierre Trudeau his first majority government

### CANADIAN AVIATION - 1969

1969 ? : Boeing introduces the 747.

1969 : Britain withdraws from the “Airbus” project development.

#### 1969 :

Britain : “Technical Education Council” (T.E.C)

British NATIONAL ADVISORY COUNCIL on EDUCATION FOR INDUSTRY AND COMMERCE : DEPARTMENT OF EDUCATION AND SCIENCE : Report of the Committee on Technician Courses and Examinations

#### APPENDIX No. 1 : LIST OF ORGANISATIONS AND PERSONS WHO SUBMITTED EVIDENCE

The Committee received evidence from the following organisations, bodies firms, establishments and individuals (those who gave oral evidence are indicated by an asterisk):

- a) Educational Organisations and Associations:
  - a) City and Guilds of London Institute (CGLI)
- b. Industrial, Business and Training Organisations :
  - Civil Air Transport Industry Training Board, British Aircraft Corporation (Operating) Limited,
- c. Professional and similar Bodies :
  - Society of Licensed Aircraft Engineers and Technologists

#### SUBJECTS :

- 1. Aeronautical Engineering - Practice : CGLI No. 171 (Ending 1969 being succeeded by CGLI No. 371)
- 2. Aircraft Electrical - Practice : CGLI No. 175 (Ending 1969 being succeeded by CGLI No. 371)
- 3. “**Aeronautical Engineering Technician**” [formerly Licensed Aeronautical Engineer, formerly Aeronautical Engineer, formerly Aeronautical Ground Engineer - ed] **Certificate** : CGLI No. 371

#### Chapter VIII — FUTURE PATTERN OF [Aeronautical Engineering] COURSES

##### GENERAL

The “new Councils” should bear in mind:

- I. the need for courses designed to produce technicians [manufacturing personnel] and their business counterparts [aircraft operating technicians] capable of “readily adapting themselves to changing circumstances”;
- II. devise effective arrangements for keeping the subject matter and structure of courses under review;
- III. give early attention to reducing the multiplicity of individual subject courses that exist at present;
- IV. and take steps to secure suitable representation from the training board and other appropriate industrial and commercial organisations on their advisory committees.

##### THE TECHNICAL [trades?] SECTOR

The T.E.C should “gradually establish a new general pattern of technician courses” [which are] “better suited to modern needs”.

The steps in this direction should:

## Notes on “Civil Aviation”

1. Initially be taken in the field of [aeronautical] engineering, and then
2. Extend “the pattern” at appropriate junctures [ ? ] to other technical fields until it becomes “the *normal pattern* of technician education for the technical [labour / trades?] sector”
3. The timing of its introduction would vary from one industry to another, and a substantial period might be needed before it becomes established as the universal pattern.
4. To minimise the possibility of confusion on nomenclature the T.E.C should make it clear that “new titles refer exclusively to new style courses and qualifications”

### Chapter IX GENERAL CONSIDERATIONS AFFECTING TECHNICIAN AND COMPARABLE COURSES

#### BRIDGING BETWEEN COURSES

1. Even with better selection and a more feasible pattern of courses, there will still be a need at certain points for “bridging” studies for some students.
2. Where formal courses have to be provided for this purpose, they will require sympathetic treatment under the criteria for the approval of courses.
3. Industrial training boards should encourage the grant of additional release time for students who are required to undertake extra bridging studies.
4. Bridging programmes should be readily available for higher technician students who wish to transfer to degree courses.

#### STUDENT ASSESSMENT

1. It would be “for the T.E.C and B.E.C to decide” in the circumstances of each course, the kind of assessment component or combination of components “that should be used to test the students”.
2. The principle should be that any student
  1. who fulfils the entry requirements for his course and
  2. who works reasonably hard and well
  3. should be entitled to expect that “he will pass the examination”.
3. The award of a technician qualification “should never depend solely on the student’s performance” in a formal examination,
4. the number of [formal examinations] should be kept to the absolute minimum.
5. The measurement of “performance” on the educational course is only one part of the total assessment of the trainee’s progress towards full preparation for his job.
6. The two Councils should:
  1. be ready to encourage the use of different combinations of assessment techniques for technician and comparable students, and
  2. consider in appropriate cases the award of qualifications for studies taken under the “credit” system.

#### DURATION AND FORM OF COURSES

The overall duration of technician and comparable courses, with what is basically a two year stage between one level of qualification and another,

#### GENERAL STUDIES IN TECHNICIAN COURSES

1. Time spent on a reasonable and relevant programme of general studies is time well spent, and
2. all syllabuses for technician and comparable courses should continue to prescribe these studies as an integral part of the course.
3. Each college should remain free to plan general studies in support of the main vocational studies, and link them closely in purpose and method in the way best suited to local needs and circumstances.
4. General studies should be of benefit in preparing technicians for a supervisory role.

There are in existence “Block Release Courses” in Aeronautical Engineering Practice complying with the City and Guilds courses 171 and 175, which are Technicians' courses leading to the awards of Part I and II certificates, and to the Full Technological certificate.

The aim of the “Block Release Courses”, as stated in the 1966 prospectus of Southall College of Technology: <sup>289</sup>

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<sup>289</sup> JOHN H. COX, Student member RAeS : Assistant Chief Engineer, Cambrian Airways Limited 9th August 1966. JOURNAL OF THE ROYAL AERONAUTICAL SOCIETY pg 883 SEPTEMBER 1966

## Notes on “Civil Aviation”

"Is to produce, first and foremost, an aircraft servicing and maintenance engineer who will have the necessary academic and practical training which will enable him to apply his knowledge and technique on transport by air under present and future conditions"

The **City and Guilds Aeronautical Engineering Practice** courses have been carefully arranged to comply with the licence regulations of the British Civil Airworthiness requirements.<sup>290</sup>

A first class pass in a Part II certificate **gives complete exemption** from the appropriate ARB basic licence examination.<sup>291</sup>

The **Society of Licensed Aircraft Engineers and Technologists** also give certain exemptions from their examination requirements to holders of the City and Guilds Part II certificate.<sup>292</sup>

### CANADIAN AVIATION - 1970

1970 : Formation of “Airbus Industrie”, a consortium of nations in Europe building common project aircraft.

1970 : Airbus Industrie introduces the A300 design.

1970 : Air Canada inaugurates Boeing 747-100 service - C-FTOA.

1970 : Government “aviation” Structure

There are nearly 30,000 registered pilots in Canada:

21,300 private,

7,562 commercial, and

1,082 glider.

Canadian “Civil aviation” is under the jurisdiction of the federal government. The Canadian Department of Transport (DOT) is responsible for the promotion and regulation of all Canadian civil aviation, both foreign and domestic, and for the provision of facilities in connection with civil operators.

#### 17 February 1970 :

the Minister of Finance announced the long proposed re-organization of DOT. Changes include conversion of DOT into a ministry and creation of an Air Administration (TCCA).

The Air Transport Board (ATB) was established in 1944 to advise the Department of Transport in matters pertaining to:

I. civil aviation, and

II. to license all commercial transports,

subject to the approval of the Minister of Transport.

Under the National Transportation Act of 1970 the ATB becomes the Air Transport Committee (ATC) of the Canadian Transport Commission.

The aim of the National Transportation Act is to blend all modes of government and private transportation, with more direct control allotted to the Minister of Transport.

The Air Transport Committee, made up of five commissioners, was especially formed to help the industry to develop along sound economic lines that will give fair returns to the operator and adequate service to the public.

The Canadian aviation industry has so far expressed some confusion regarding the legality of many of the ATC's rules and regulations.

#### 1966 :

Canadian Government Policy toward Airlines

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<sup>290</sup> JOHN H. COX, Student member RAeS : Assistant Chief Engineer, Cambrian Airways Limited 9th August 1966. JOURNAL OF THE ROYAL AERONAUTICAL SOCIETY pg 883 SEPTEMBER 1966

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## Notes on "Civil Aviation"

the Canadian Government announced a new air transport policy that would allow for, among other things, limited regional carrier competition with Air Canada and Canadian Pacific, the transfer of some routes away from the two trunk carriers, and subsidies on a "use it or lose it" basis.

The new policy allotted the regional carriers a larger role in connection with the development of domestic and international charter services, inclusive tours, and new types of services. Regionals are allowed to operate along the so-called main line, but without nonstop authority between major terminals.

The Government would like to see closer cooperation among regionals, including interline and inter-ticketing agreements, joint training programs, and spares support.

The Government also announced that a committee would be established to develop greater cooperation between the mainline carriers and the regional carriers in a variety of fields ranging from technical and servicing arrangements to joint fare arrangements and other suitable areas of cooperation.

The airlines which are currently eligible for subsidies are Pacific Western Airlines, Transair, Nordair, Quebecair, and Eastern Provincial Airways. Continuation of any subsidy is dependent upon developing and maintaining an adequate volume of traffic.

In reviewing applications for subsidies the Air Transport Board is to consider suitability and availability of other means of transportation; require evidence that the service has or will have substantial use; and set limits upon the period of time during which the subsidy may be paid, unless cause is shown for continuation.

Steps are also to be taken to assist regional carriers in the acquisition of aircraft by development of a "scheme" (Programme) for consultation between the Government and the carriers regarding plans for new aircraft; and by a special investigation designed to explore the possibility of developing a joint approach to aircraft procurement on the part of the carriers.

All carriers operating on regular routes are required to report to the Government proposals for multi-engine aircraft purchases before firm orders are placed. Subsidies are to be given only to enable the provision of the minimum equipment for eligible air services and not to enable the carrier to re-equip needlessly at the public expense.

The Government reportedly will use Air Canada's profits to finance the new subsidies for regional airlines. Unfortunately, the Canadian aviation industry is experiencing a great deal of confusion regarding the Government's new policy. There has been little implementation of previously enunciated policy governing the mainline and regional carriers. The record to date shows no new competition, no transfer of routes, and discontinuance of the only subsidy payments made.

Historically, the Government's policy on scheduled international services has been that they should serve the Canadian interest as a whole and represent a single integrated plan.

Only Air Canada and Canadian Pacific Airlines have the right to provide international and trans-border services, and each has been given its own sphere of operations. Air Canada serves the United Kingdom, northern Europe (except Amsterdam, which is served by CPA) and the Caribbean. Canadian Pacific serves the Pacific, Asia, Australia, New Zealand, southern Europe, and Latin America. The United States, served by both airlines, and Africa, presently served by neither, are exempted from these spheres.

Air Canada and CPA will continue to be the only carriers to provide trans-continental service. During 1967 Canadian Pacific was permitted to inaugurate its second transcontinental service, and in 1969 increased it to five round trips daily. This brought CPA's share of the total market near the 25 percent granted in the Government formula for transcontinental service.

The Government's policy has been that Canadian Pacific's mainline service should not be allowed to compromise or seriously injure the economic viability of Air Canada's operations, but that above this basic minimum both Air Canada and CPA should be given an opportunity for growth.

### Aircraft on Register

Among free world countries, the Canadian civil aviation fleet is second in size only to that of the United States.

September 1969 there were 10,591 civil aircraft on the Canadian register,

- a) 3,113 commercial aircraft.
- b) 6,709 private aircraft,

## Notes on "Civil Aviation"

- c) 200 state owned,
- d) 18 experimental,
- e) 91 restricted commercial,
- f) 428 ultra light, and
- g) 32 private restricted aircraft. (See table 1).

September 1969 : Canadian Commercial Air Services

The two "major" Canadian airlines are:

1. Air Canada, a subsidiary of Canadian National Railways. Owned and financed by the Government of Canada. Canadian National Railways is a Crown Corporation.
2. Canadian Pacific Airlines (CPA), a subsidiary of Canadian Pacific Railways. Owned and financed by Canadian Pacific Railways. Canadian Pacific Railways is a Private Corporation.

In addition, there are four privately owned regional carriers providing scheduled (class 1) air service. They are

1. Eastern Provincial Airways,
2. Quebecair,
3. Transair,
4. Pacific Western Airlines.

There are also approximately 370 class 2 thru 7 air carriers which provide regular, irregular, charter, contract, and specialty services.

The new Federal Government (Liberal - Prime Minister Pierre Elliot Trudeau) "review of airline policy" issued during late 1968 has re-kindled interest in a possible merger of Air Canada and CPA, **but the view still exists** that "competition is necessary on domestic routes" and to a limited extent, on international routes.

1968 : Canadian air carriers transported

9.3 million revenue passengers [an increase of 3.8 percent over 1967]

445 million pounds of revenue goods [an increase of 21.3 percent over 1967].

Revenue passenger miles performed increased 11.5 percent to 8.2 billion, and goods ton miles increased 32.8 percent to 226 million.

Operating revenues were up 13 percent to \$614 million,

operating expenses increased 11.6 percent to \$576 million. (See table 2.)

Approximately 90 percent of the operating revenues and expenses were accounted for by the six scheduled airlines, the six scheduled airlines also carried over 90 percent of the passengers and 66 percent of the cargo.

Bulk traffic, or charter revenues, totaled \$70.1 million [a 21.8 percent increase over 1967]

51 carriers operating helicopters.

Helicopter operations:

flew an estimated 160,000 revenue hours

had operating revenues of \$18,614,000.

The group V2 carriers transported [in 1976]

216,660 revenue passengers [a decrease of 3.1 percent over 1967]

7,708 tons of goods [a decrease of 5.2 percent over 1967]

Revenue hours flown were 407,122 [an increase of 8.7 percent over 1967]

Foreign carriers operating scheduled service in Canada transported

2,648,252 revenue passengers [an increase of 69.6 percent over 1966]

34,508 tons of revenue goods [an increase of 20.8 percent over 1966]

Air Canada

Air Canada, whose name was changed from Trans Canada Airlines on January 1, 1965, serves approximately 61 communities in Canada, the United States, the British Isles, continental Europe, U.S.S.R., Bermuda, the Bahamas, and the Caribbean islands. It is the world's eighth largest carrier and the largest outside the United States and the U.S.S.R.

## Notes on "Civil Aviation"

(Under the proposed DOT reorganization announced on February 17, 1970, Air Canada would eventually become a separate crown corporation.)

In 1967 Air Canada started operating Toronto/Montreal/Miami, Montreal/Chicago, and Toronto/Los Angeles services.

In 1968 the company carried 6,413,000 passengers on scheduled flights, an increase of 1.3 percent over 1967.

Air freight increased 36.5 percent to 116,878,000 ton miles

Air express increased 16.3 percent to 7,878,000 ton miles

air mail rose 6.3 percent to 22,811,000 ton miles

Available seat miles on scheduled flights increased by 20.2 percent during 1968 to 9,683,835,000,

revenue passenger miles totaled 5,621,657,000, in 1978 up 7.7 percent,

making Air Canada seventh in the world in revenue passenger miles flown.

System total ton miles amounted to 711,393,000, an increase of 11.5 percent.

Net income after tax in 1968 was \$8,184,000 and return on investment

6.3 percent, compared with \$3,547,000 and 5.2 percent in 1967.

Operating revenues were up 12 percent to \$387,628,000

Operating revenues were split into

passengers (85 percent),

freight express and

excess baggage (9 percent),

mail (4 percent), and

charter and incidentals (2 percent).

1968 : Air Canada takes delivery of three 139-passenger DC-8's and three 196-passenger long-body DC-8-61's, increasing its DC-8 fleet to 27 aircraft.

Deliveries of 94-passenger DC-9 aircraft totaled 18 during the year, while six 72-passenger DC-9's were returned to McDonnell Douglas Corporation.

Introduction of additional jet aircraft, especially the long-body DC-8's, resulted in larger capacity, and concurrently total load factor dropped from 75 percent to 58 percent.

The airline has started a program to retire its fleet of Vickers Viscount and Vanguard aircraft.

Five of the airline's 23 Vanguards have been retired..

### Other Airlines

Among the smaller Canadian airlines are

1. Air Gaspé Inc.,
2. Airwest Airlines Ltd.,
3. B.C. Airlines Ltd.,
4. Cavalier, Eldorado Aviation Ltd.,
5. A.Fecteau Transport Aerien Limitee,
6. Gagnon Air Services Ltd.,
7. Georgian Bay Airways Ltd.,
8. Gordon Airways Ltd.,
9. Great Lakes Air Services Ltd.,
10. Laurentian Air Services Ltd.,
11. Matane Air Services Ltd.,
12. North Canada Air ,Ltd. (Norcan Air),
13. Northern Wings Ltd. (Les Ailes du Nord),
14. Northward Aviation Ltd., and
15. Parsons Air-wings Ltd.

### General Aviation

The Canadian Department of Transport (DOT) defines civil aviation as "all flying performed by civil aircraft other than route operations of scheduled carriers".

Canadian General aviation thus includes the non-route services of scheduled carriers, all other commercial flying, private and business flying, and flying performed by nonmilitary government aircraft.

Over 70 percent of the 10,591 aircraft on register as of September 30, 1969, were non-commercial.

## Notes on “Civil Aviation”

However, the average utilization of general aviation is quite low.

In 1968 an estimated 700,000 hours were flown by private flying, a 97,000 hour increase over 1967.

General aviation in Canada has been limited by the one problem aviation normally solves—distance.

The advent of the business jet, however, has eased the time and comfort considerations of the long distance commuting businessman.

Owned and leased corporate aircraft are increasingly supplementing their workhorse piston-powered predecessors.

The growth of advanced flying also reflects the trend toward more sophisticated equipment.

Even the famous bush operator is requiring “more specialised” aircraft for their operation.

### 1969 Canadian Private Flying

In the past few years private flying has increased more rapidly than commercial aviation and this trend is expected to continue.

September 1969 : 6,709 private aircraft are registered in Canada, 5,406 of which have valid certificates of airworthiness.

The percentage of private aircraft in the total aviation fleet has risen from 40 percent in 1951 to over 63 percent in 1968.

At the end of 1967 there were 21,089 licensed private pilots. (in 1988 there are only some 8 thousand AMEs!)

In 1969 an estimated 700,000 hours were flown by the private sector; 603,000 were flown in 1967.

All indications are that business aviation is at an all time high and that more and more business airplanes are being sold, chartered, or leased. In 1968 Canadian companies owned approximately 1,000 aircraft of a type or size normally operated in business/executive configurations, including 20 business jets. This was an increase of 240 over the 1967 fleet.

### Government Support of General Aviation

While the Federal Government has no national program designed exclusively to support general aviation, general aviation benefits from Government support of aeronautical facilities and services, particularly airports. In addition, the DOT administers a program of assistance for flying training which primarily benefits general aviation.

Charges for general aviation are kept low and revenues from general aviation represent only a small part of the services from which general aviation aircraft benefit.

All civil airports, other than a very small number of private airports, are available for use by general aviation.

However, at the largest scheduled carrier airports, beginning flying training is not permitted, and a special landing fee is charged at the three largest airports for small privately-registered aircraft, which may land elsewhere without charge.

The Government does not offer subsidies to any nonscheduled carriers.

The Government policy on licensing charter operators has changed several times in the past ten years:

in 1958 the Government adopted a “liberal policy” of granting licenses;

in 1962 the increased controls were reinstated;

in early 1966 the Government again liberalised its policy on granting licenses.

(src ref - World Survey of Civil Aviation - U.S dept of commerce)

1970's :

UK RAF - in the early 1970s it was decided to introduce a three-year “dual trade” Apprenticeship for the RAF Engineering Technician who would now be specialising in just two trades, “Airframes and Propulsion”. [is this the final result of the Canadian CAF failing to bring the UK structure for civil aviation onboard in 1919? Did Canada have a role in turning what was once a very highly skilled trades person, with a future advancement potential into officer country and retirement into Civy life with a solid trade or an AME license into a lowly A&P mechanic?

Was this done so that ex-RAF / RCAF technicians could find a job in the ICAO governed airlines?]

1970 :

the US Civil Aeronautics Board is eliminated.

## Notes on “Civil Aviation”

The United States Civil Aeronautics Board (CAB) was one-half of the U.S. Civil Aeronautics Authority that was responsible for all aviation matters in the United States related to “safety rulemaking, accident investigation, and economic regulation of the airlines.” (source ref. The Federal Aviation Administration and Its Predecessor Agencies, <http://www.centennialofflight.gov/essay/Government-Role/FAA-History/POL8.htm>)

### CANADIAN AVIATION - 1971

USA : When the results of the CARD study were released in March 1971, the report concluded that a healthy civil aviation industry and transportation system provided a variety of significant benefits to the nation. Consequently, the study recommended, the federal government should take an active role in developing a national aviation policy and conducting R&D to benefit civil aviation. - DOT- NASA Civil Aviation Research and Development (CARD) Policy Study. SRC ref NASA SP-4216

### CANADIAN AVIATION - 1972

1972 : Canada’s first licensed female AME - Maureen Rutledge - is granted AME license No. (Y)YZ - M License # 1081 issued in Carp, Ont. - Source Roger Beebe: [//www.helicoptersmagazine.com/career-development/serving-the-industry-1845#sthash.M5JevAts.dpuf](http://www.helicoptersmagazine.com/career-development/serving-the-industry-1845#sthash.M5JevAts.dpuf)

Interestingly “YZ” refers to the regional office in the airport where the license was issued (YYZ) and the M refers to “Maintenance”, does then “P = Private Pilot, C= Commercial Pilot, and T = Transport Pilot”.

### CANADIAN AVIATION - 1973

### CANADIAN AVIATION - 1974

“aircraft maintenance engineers are an essential part of the field of aeronautics and therefore constitute a work, business or undertaking coming within the exclusive jurisdiction of the Parliament of Canada”. <sup>293</sup>

### CANADIAN AVIATION - 1975

1975 :

In the UK the “Private Aviation Committee” resolved to approach the Civil Aviation Authority with a request for an ‘in depth’ review of the philosophy and implementation of light aircraft certification and maintenance<sup>294</sup>.

June 1977 : UK : introduction of new aircraft log books and extensions to the finite lives for aircraft piston engines.

The full “scheme” (Programme) will be introduced in 1978 and will involve changes to certification categories, maintenance schedules and airworthiness procedures<sup>295</sup>.

The proposals include provision of two levels of maintenance;

1. one for the Public Transport aircraft, and

<sup>293</sup> Field Aviation Co. v. Indust. Rel. Bd. (Alta.), 1974 ALTASCAD 62, [1974] 6 W.W.R. 596, 49 D.L.R. (3d) 234 (Alta. C.A.)

<sup>294</sup> (Light Aircraft Inspection J.E Heywood - Airworthiness Surveyor with the CAA Published by T & A D Poyser, UK (1977) ISBN 10: 085661016X ISBN 13: 9780856610165)

<sup>295</sup> (Light Aircraft Inspection J.E Heywood - Airworthiness Surveyor with the CAA Published by T & A D Poyser, UK (1977) ISBN 10: 085661016X ISBN 13: 9780856610165)



## Notes on “Civil Aviation”

2. one for the Private aircraft

However, at the time of writing, the proposals have not received formal acceptance.

“When in doubt over the state of an item  
always ask a qualified aircraft maintenance engineer for his judgement.  
*He may charge you for his advice but ....*”<sup>296</sup>

### CANADIAN AVIATION - 1976

1976 :

*Sir Frank Whittle, emigrates to the U.S.A, accepts position of NAVAIR - Research Professor at the United States Naval Academy from 1977 1979.*

### CANADIAN AVIATION - 1977

### CANADIAN AVIATION - 1978

*deregulation of the U. S airline industry in 1978 made the business much more competitive. As a result, accountants became more powerful players in purchase decisions, and airlines and airframe manufacturers became much more likely to reject new technology unless it was going to show a concrete, short-term profit. src NASA SP-4216*

### CANADIAN AVIATION - 1979

1979 :

*The International “Agreement” on Trade in regards to Civil Aircraft is signed on Apr. 12, 1979 (The GATT)*

### CANADIAN AVIATION - 1980

early 1980s, a proposal to reduce or even eliminate government support for aeronautical research led the White House Office of Science and Technology Policy (OSTP) to re-examine the government’s role in aeronautical research and development (R&D). After a year-long study, its final report concluded that “government support of aeronautics was not only still appropriate, but was a critical element to the continued economic health of the country”. 1980, the U.S. market share of large civil transport sales was 90 percent. By 1992, that percentage had dropped to 70 percent and was in danger of falling even further.

ref NASA SP-4216

### CANADIAN AVIATION - 1981

**28 May 1981 :**

SENATE JOURNAL of Canada : The Honourable Senator Perrault.P.C., laid on the Table the following:  
Report of the Commission of Inquiry on Aviation Safety, Volume I (Commissioner, The Honourable Mr. Justice Charles L. Dubin), dated May 1981.

**27 October 1981 :**

SENATE JOURNAL of Canada : laid on the Table the following : Report of the Commission of Inquiry on Aviation Safety, Volume 2 (Commissioner, The Honourable Mr. Justice Charles L. Dubin), dated October 1981.

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<sup>296</sup> (Light Aircraft Inspection J.E Heywood - Airworthiness Surveyor with the CAA Published by T & A D Poyser, UK (1977) ISBN 10: 085661016X ISBN 13: 9780856610165)

## Notes on “Civil Aviation”

the [Taft-Hartley Act of 1947](#), which applied unfair-labour-practice provisions to unions and in a variety of ways weakened their economic and organizational power, labour law in the United States became steadily more burdensome to the labour movement. By contrast, Canadian federal and provincial law retained, and even deepened, its pro-union bias.

No Canadian counterpart to U.S. President [Ronald Reagan's](#) decision in 1981 to break a strike by federal air-traffic controllers—an act of enormous symbolic importance that legitimized the resurgence of [antiunionism](#) in corporate America.

Anti-unionism gained no such public legitimacy in Canada.<sup>297</sup>

### CANADIAN AVIATION - 1982

*Ronald Reagan's science advisor also noted in 1982 that “aircraft are now the dominant common carrier for inter-city travel, and the safety and control of that travel are a federal responsibility.” Src ref NASA SP-4216*

#### 1982 :

the Canada Act, 1982 removes the last remaining ties of legal dependence on the Parliament of the United Kingdom

Government of Canada - Senate report : Industry Trade and Commerce : Vote 6C— Canadair Limited was established through Appropriation Act No. 1, 1980-81 at \$150 million. These loans were used to finance the development and production of the Challenger aircraft and other general obligations of the Company. It is proposed to expand the guarantee authority for Canadair loans to permit:

- the deeming of the inclusion of other financial arrangements with financial institutions such as promissory notes, banker's acceptances and bank charges to be included in the guarantee;
  - the increasing of the guarantee limit from \$150 million to \$1,350 million;
  - the refinancing of existing loans and the draw down of new loans as long as the aggregate liability of the Crown does not exceed the limit of \$1,350 million;
- and
- the declaration of an expiry date for the guarantee authority of March 31, 1991

A review of the Corporation's financial requirements indicates the necessity for loan guarantees would reach the \$1,350 million limit by mid 1983

Vote 7C—To clarify the current authority for loan guarantees to the de Havilland Aircraft of Canada Limited so as to deem that the "guarantee" authority includes other financial arrangements and that refinancing can be arranged assuming the aggregate liability of the Crown does not exceed the guarantee limits.

Explanation—The present loan guarantee to de Havilland was established through Appropriation Act No. 4, 1980-81 at \$450 million. These loans were used to finance the development and production of the DASH 8 aircraft and other general obligations of the Company. The requested authority clarifies the meaning of the loan guarantee to ensure that it includes financial arrangements such as promissory notes, banker's acceptances and bank charges incurred in making the loans. In addition, this proposed authority will provide de Havilland with the ability to refinance existing loans and draw down new loans so long as the aggregate liability of the Crown does not exceed \$450 million.

Eldorado Nuclear Limited and subsidiary Eldorado Aviation Limited

23 February 1982 : The Honourable Senator Perrault, laid on the table the Report of the Commission of Inquiry on Aviation Safety, Volume 3 (Commissioner, The Honourable Mr. Justice Charles L. Dubin), dated February 1982.

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<sup>297</sup> <https://www.britannica.com/topic/organized-labor/The-United-States-and-Canada#ref540199>

1982 : While the civil courts have expanded the scope of review over inferior tribunals in recent years, they have been reluctant to interfere in military matters, unless:

1. the military tribunal has acted without jurisdiction or
2. the military tribunal has exceeded its jurisdiction.

Until recently, the civil courts would not inquire at all into matters involving the discipline of members of the Armed Forces.

“an action cannot be maintained by a subordinate officer against a commander for an act done in the course of discipline and under powers legally incident to the situation.”

Sutton v. Johnstone - Court of the Exchequer, London, England, 1786.

The plaintiff: Captain Sutton, Commanding Officer of Her Majesty's Ship Isis.

The defendant: Commander Johnstone, Officer Commanding, in charge of the British squadron.

In 1871 the British were at war with the French:

1. In April of 1781 Her / His Majesty's ship “Isis” was damaged in a naval engagement against the enemy.
2. The French fleet withdrew from the battle.
3. Commander Johnstone ordered Isis to pursue the enemy.
4. Captain Sutton did not obey Johnstone's order because of the [poor, battle damaged] condition of Isis..
5. Commander Johnstone had Captain Sutton arrested for disobedience of orders.
6. Captain Sutton was then tried by court martial for “*disobedience of orders*”.
7. Captain Sutton was acquitted.
8. Captain Sutton then brought civil suit against Johnstone for malicious prosecution.
9. The matter was tried twice in the lower courts.
10. Captain Sutton was awarded damages on both occasions.
11. Commander Johnstone appealed to the Court of Exchequer.
12. The Court of Exchequer finds in favour of Commander Johnstone and reverses the original judgment.
13. Captain Sutton appeals to the House of Lords.

## Notes on "Civil Aviation"

14. In the House of Lords, Lord Mansfield and Lord Loughborough state in obiter that "*an action cannot be maintained by a subordinate officer against a commander for an act done in the course of discipline and under powers legally incident to the situation.*"
15. The judgment of the Court of Exchequer is affirmed by the 'Lords on the ground that "Johnstone had probable cause for the prosecution".
16. The attitude of the courts was based on "obiter dictum".

The dictum of Lords Mansfield and Loughborough has been cited since 1786 for the broad proposition that "the civil courts will not inquire into the exercise of military discipline".

Dawkins v. Lord Rokeby - Military or civil court? (1866)

The plaintiff: Serviceman Dawkins

The defendant : Lord Rokeby

1. During ?? action ?? Lord Rokeby ??
2. Serviceman Dawkins ??
3. [Lord Rokeby has Serviceman Dawkins arrested, placed under irons ? and court martialled for disobeying ???]
4. Dawkins files a civil suit for damages for "false imprisonment and malicious prosecution."
5. The court held that "even assuming there was clear malice and absence of probable cause", the plaintiff, Dawkins, had no cause of action.

Dawkins v. Lord Rokeby - Court of the Exchequer, London, England 1873

The plaintiff: Serviceman Dawkins

The defendant : Lord Rokeby

A subsequent action to the 1866 case was brought by the same parties, and heard by the Court of Exchequer in 1873.

Kelly C.B. delivered the judgment of the Court and dismissed the plaintiffs action.

Kelly C.B. stated: With reference, therefore, to such questions, which are purely of a military character, the reasons of Lord Mansfield and the other judges in Sutton v. Johnstone [...] are [...] authorities to *show that a case involving questions of military discipline and military duty alone are cognizable only by a military tribunal, and not by a court of law.*

Canadian courts have followed the general 'hands off' attitude of the English civil courts regarding matters of military discipline.

1919 : Ex parte Fogan - Supreme Court of New Brunswick

1. the plaintiff serviceman was convicted by court martial for the offence of drunkenness committed while in a private home.
2. It was Fogan's third offence.
3. Fogan was sentenced to nine months' imprisonment at hard labour.
4. Fogan applied to the civil court by way of certiorari.
5. The civil court refused to intervene and in dismissing the action, the Court held that "*certiorari was not available to review a matter of procedural error made by a military tribunal.*"

One of the leading Canadian cases exemplifying the 'hands off' attitude of the civil courts regarding matters of military discipline is

Regina and Archer v. White - Supreme Court of British Columbia (1956)

The plaintiff(s) : The Crown, Archer - Superintendent of the Royal Canadian Mounted Police.

The defendant: White - Constable of the Royal Canadian Mounted Police

1. White is convicted of four disciplinary charges under the Royal Canadian Mounted Police Act.
2. White is dismissed from the force.
3. White applies for certiorari before the Court in order to remove the record of his convictions [held by RCMP Superintendent Archer]
4. The trial court recites the "common" law principle that "*the civil courts have no power to interfere with matters of military conduct and discipline.*"
5. Whites suit is dismissed.

## Notes on "Civil Aviation"

6. In dismissing White's application, the court held that disciplinary matters within the RCMP are akin to those before a military tribunal and, therefore, the same principles apply. Certiorari is not applicable to decisions of the RCMP disciplinary tribunal when that body has acted within its statutory powers.
7. White appeals the decision to the British Columbia Court of Appeal,
8. The British Columbia Court of Appeal held that certiorari was applicable in this case, because the military cases are not relevant to RCMP disciplinary matters.
9. Superintendent Archer appeals the ruling of the British Columbia Court of Appeal to the Supreme Court of Canada.
10. The Supreme Court:
  1. is unanimous in allowing Archer's appeal.
  2. restores the judgment at trial.
  3. only Justice Abbott J. agreed with the trial judge that *the courts have no power to interfere with internal matters of discipline within the RCMP*.
  4. The majority of the Supreme Court held that *the right of the court to intervene by way of certiorari is undoubted, both in respect of the military and the RCMP*.
  5. In this case, however, there was nothing in the material before the court to sustain charges of fraud, bias, or want of jurisdiction.
  6. Justice Rand J. expressed the opinion that *the court would be reluctant to interfere with proceedings before the RCMP tribunal if within the scope of authority granted*,
    1. wrongs are done by individuals, [and that is not beyond possibility,]
    2. the appeal must be to others than to civil tribunals, or
    3. as in the case of the Army, they must be looked upon as a necessary price paid for the vital purposes of the force.

Notwithstanding the general reluctance of the civil courts to interfere in military matters, when the exercise of military authority denies service personnel their fundamental common law rights and liberties, the civil court will intervene.

This principle was followed in

Rex v. Thompson (No.]) (1945) - which stands as one of the few cases in which the civil courts have been willing to interfere in the exercise of military discipline.

In this case, Thompson applied to the civil courts by way of habeas corpus.

Thompson - Non-Commissioned Officer in the Canadian Army.

Thompson was arrested on charges of theft of public property and improper possession of public property.

Thompson was detained in military custody for two and one-half months, and finally was brought before a District Court Martial. Thompson submitted that the Court Martial did not have jurisdiction to hear the case.

The Court Martial held that *it did have jurisdiction* and proceeded with the trial.

The Court Martial proceedings were interrupted by Thompson's application for habeas corpus brought before the High Court of Ontario.

the High Court of Ontario - Justice LeBel J.

LeBel J. examined the relevant provisions of:

1. the Army Act and
2. the military rules of procedure.

LeBel J. noted that "The jurisdiction of the Court Martial is conditioned upon *a prior hearing of the charge by the Commanding Officer (CO)*".

During this "Prior Hearing", the C.O must exercise his or her discretion by either:

1. dismissing the charge,
2. disposing of the case summarily,
3. referring the matter to proper military authority, or
4. remanding the case to trial by court martial.

LeBel J. found that the Court Martial did not have jurisdiction to hear the matter because the requisite hearing by the Commanding Officer had not been held.

LeBel J held that the Court Martial had acted without jurisdiction and ordered that Thompson be released from custody.

## Notes on "Civil Aviation"

Following his release from custody, Thompson was transferred to another regiment.

Thompson was re-arrested at his new posting on the same charges.

Thompson again petitioned the civil courts, this time by way of prohibition in order to prevent his new Commanding Officer from taking further proceedings on the same charge.

The Ontario High Court granted Thompson's application, and in so doing Urquhart J. expressed some concern that the new Commanding Officer knew little of Thompson apart from the charges pending before him.

Therefore, *the Commanding Officer could not reasonably exercise his discretion regarding the matter.*

Urquhart J. held that Thompson *had good cause for being apprehensive about his hearing before the new Commanding Officer and his trial by court martial.*

Rex v. Thompson is an exceptional case in a long line of Anglo- Canadian jurisprudence.

Although Urquhart J. in Rex v. Thompson (No.2)<sup>31</sup> found that there was a reasonable apprehension of bias, there was no express finding that the new Commanding Officer had acted without jurisdiction.

The statutory basis of the Commanding Officer's discretion does not require familiarity with the personnel brought before him or her.

Clearly Urquhart J. was more *concerned about the abuse of process* [in light of Thompson's initial release by way of habeas corpus] than he was about the legality of the proceedings under the new Commanding Officer.

*In Canada, service personnel do not entirely give up their common law rights upon enlistment. However:*

5. *The common law rights of service personnel may be expressly taken away by statute, ( [1946] O.R. 77, 4 D.L.R. 579, 86 C.C.C. 193 (H.C.).)*
6. *The common law rights of service personnel may be expressly taken away by order-in-council under the War Measures Act, (S.C. 1914 (2d Sess.), c. 2. See Re Gray (1918), 57 S.C.R. 150, 42 D.L.R. 1.) which grants the federal Cabinet the authority to suspend common law rights during a national emergency.*

The power of the federal Cabinet to authorize conscription in time of war was upheld by the majority of the Supreme Court of Canada in Re Gray (1918).

Anglin J. quoted with approval the judgment of Lord Atkinson in R. v. Halliday.

Anglin J. stated: However precious the personal liberty of the subject may be, there is something for which it may well be, to some extent, sacrificed by legal enactment, namely, national success in the war, or escape from national plunder or enslavement.

It is not contended in this case that personal liberty of the subject can be invaded arbitrarily at the mere whim of the executive.

What is contended is that the executive has been empowered during the war, for paramount objects of State, to invade by legislative enactment that liberty in certain states of fact.<sup>36</sup>

Once a person enlists in the military, he or she becomes subject to the Code of Service Discipline at all times and in all places and, consequently, his or her liberty is considerably constrained.

Once a person is conscripted into service, he or she becomes subject to the Code of Service Discipline at all times and in all places and, consequently, his or her liberty is considerably constrained.

While members of the Armed Forces may apply for review of a military matter, the scope of review is much narrower than the civil courts have exercised for other inferior tribunals.

The courts have been particularly loathe to interfere in military matters during a national emergency, and pursuant to sweeping powers granted under the War Measures Act, cabinet powers to suspend common law rights entirely have been held to be *intra vires*.

Generally speaking, under the common law, it is clear that military personnel have very limited rights of review.

## Notes on "Civil Aviation"

### CANADIAN AVIATION - 1983

1983 report of the White House Science Council stated that "The ultimate purpose of Federal support for R&D is to develop the science and technology base needed for a strong national defense, for the health and well-being of U.S. Citizens, and for a healthy economy. src ref NASA SP-4216

### CANADIAN AVIATION - 1984

### CANADIAN AVIATION - 1985

### CANADIAN AVIATION - 1986

1986, United States high-technology imports exceeded exports for the first time. The aerospace industry was one of the only remaining fields with a trade surplus, 90 percent of which was attributable to the sale of aircraft and aircraft parts. Compared to an overall U.S. trade deficit in manufactured goods of \$136 billion in 1986, the aerospace industry had a surplus of \$11.8 billion src ref NASA SP-2426

### CANADIAN AVIATION - 1987

November 1987 : licensed aircraft maintenance engineers, Laverne Ross and Keith Comyn of Frontenac Aviation, performed "a condition and conformity inspection" and a "100 hour inspection" of the Rideau Gliding Club's Cessna 150 aircraft.

### CANADIAN AVIATION - 1988

8 June 1988 : Shortly after take-off from Gananoque Airport a Cessna 150 owned by the Rideau Gliding Club crashes, resulting in death of Henry Janzen, the pilot and sole occupant. The Canadian TSB investigates and determines the cause of the accident was the in-flight separation [breaking] of the elevator control cable as a result of contact between it and the battery [positive] lead which caused the control cable to wear through the insulation of the battery lead. The subsequent contact between the elevator control cable and the copper wire core of the battery lead caused electrical 'arcing' that melted the strands of the elevator control cable, causing it to break in-flight resulting in loss of control the airplane.

During the accident investigation Safety Board investigator Enns spoke to both AMEs, Comyn and Ross, and neither could remember specifically inspecting the Cessna's battery area in respect to the contact [between flight controls and other] systems the previous November.

Mrs. Janzen subsequently files suit against the Rideau Gliding Club and their contracted inspectors Frontenac Aviation

At the "Civil" trial, Comyn testified that during the 100 hour inspection he would have disconnected the battery lead and serviced the battery as part of the inspection.

Both AMEs, Comyn and Ross, testify that the automotive battery lead found in the aircraft by the Transportation Safety Board investigation following the accident was not in the aircraft when they performed the inspection.

A witness, [Mr.] Jenkins, who was an aviation insurance adjuster, testified that he was told by Comyn that Comyn had no recollection of the specific work done on this 100 hour inspection.

Comyn admitted on cross-examination that he had no "specific memory" of the battery lead that was in the aircraft when he inspected it in November 1987.

A review of the evidence of the witness Ross also indicates that he actually had no specific recollection of the positioning of the battery lead in relation to the elevator control cable.

## Notes on "Civil Aviation"

The plaintiff, Mrs. Janzen, tendered evidence that the only record prior to the accident of an installation, or replacement of a battery lead, was an invoice dated March 24, 1983.

In response, the appellant, Frontenac Aviation, called a witness who testified that the battery lead found in the aircraft by the government [TSB] inspectors was an automotive part manufactured by the Whitaker Cable Company of Canada "some time after 1984".

The trial judge accepted the evidence of the expert, Mr. Max Vermij, that the elevator control cable had come into contact with the battery lead intermittently over a period of years, until the rubber insulation was finally worn through, resulting in the electrical arcing which melted and broke the elevator control cable.

Vermij emphasized that the overall appearance of the damage to the battery lead and its insulation "took years to develop".

Vermij denied that his opinion depended upon the battery lead having been installed in March of 1983, but stated that a lengthy time frame before the accident was consistent with his theory.

Vermij further testified that the damage to the battery lead that he observed could not have occurred if the battery lead had been installed shortly before the accident of June 18, 1988. [was an actual test accomplished on a like aircraft with the exact same conditions being present? A tie-wrap can chew thru a steel engine mount in less than 50 hours and a steel cable can saw thru a rubber sleeve within a few hours if the angle and pressure are correct]

Regardless of the actual date of the installation of the battery lead, the trial judge accepted the expert Vermij's evidence that the battery lead had been in the aircraft "some years before the accident". The trial judge further found on the "balance of probabilities" that the battery lead was in the aircraft prior to Frontenac Aviation's 100 hour inspection in November 1987.

Evidence was also placed before the trial judge that the deceased:

1. Removed the battery [from the aircraft] but left the [battery] lead in the fuselage.
2. Was working in a dark cramped area
3. Probably would not have noticed the damage to the [battery] lead as it [the lead] was black and the damage was on its [the leads] underside.

Furthermore:

1. the battery access panel permitted access only to the top of the battery.
2. the battery access panel permitted access did not permit visibility of the battery lead.
3. There was no evidence that the deceased had ever replaced or installed a battery lead in any aircraft.

It was further submitted [to the judge] [on behalf of the cross-appellant] that the deceased:

1. had no duty to check the condition on the battery lead when he removed the battery from the aircraft.
2. was entitled to rely on prior inspections [made by the AME] of all aircraft components, including the battery lead.

The essence of the trial judge's finding with respect to the appellant's negligence is as follows:

1. Given Mr. Comyn's observations, he and/or Mr. Ross should have inspected the battery box, the positive lead and the elevator cable much more carefully than they did.
2. I am convinced that if they had done so, they would have seen the problem and either replaced Exhibit #2 with a certified airplane part or at the very least secured the lead so that there would be no possibility that it would come in contact with the cable.

1988 - ONTARIO NORTHLAND TRANSPORTATION COMMISSION,  
a Crown Corporation of the Province of Ontario, purchases Air-Dale Limited (\$500,100) .



## Notes on "Civil Aviation"

The major assets of the company at the time of purchase were commercial air licences, operation certificates and experienced flight personnel. With the purchase, the Commission through NorOntair (Valued at \$15,942,700) now provides the air transportation services and Air-Dale Limited is essentially an inactive company.<sup>298</sup>

payments made in 1988 by the Ontario MINISTRY OF NATURAL RESOURCES under "Other Payments"- Materials, Supplies, etc., :		
	Abitibi Helicopters Limited,	879,019
1.	Air Muskoka Ltd.,	1. 173,106;
1.	Air-Dale Limited,	1. 38,983;
1.	Airquest Surveys Limited,	1. 71,750;
1.	Alpine Helicopters Ltd.,	1. 1,149,293 ;
1.	Aquarius Flight Inc.,	1. 262,342;
1.	Atikokan Aero Service Ltd.,	1. 41,361;
1.	Awood Air Ltd.,	1. 324,668;
1.	Bearskin Lake Air Service Ltd.,	1. 795,982;
1.	Cambrian Aviation,	1. 35,316;
1.	Can-Arc Helicopters,	1. 410,482;
1.	Can-Du Air Ltd.,	1. 119,377;
1.	Canadair Ltd.,	1. 494,159;
1.	Canadian Airlines International,	1. 60,053;
1.	Champlain Air Survey,	1. 31,132;
1.	Era Helicopters Inc.,	1. 361,023;
1.	Farm Air Services,	1. 129,785;
1.	Field Aviation Co. Ltd.,	1. 43,137;
1.	Field Aviation Parts Sales Ltd. Toronto Branch,	1. 232,067;
1.	Flightsafety Canada Ltd.,	1. 158,805;
1.	Flying Colours Inc.,	1. 47,227;
1.	General Airspray Limited,	1. 86,622;
1.	Glanford Aviation Ltd.,	1. 85,413;

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<sup>298</sup> Public Accounts of Ontario Notes to Consolidated Financial Statements Concluded December 31, 1988

# Notes on "Civil Aviation"

payments made in 1988 by the Ontario MINISTRY OF NATURAL RESOURCES under "Other Payments"- Materials, Supplies, etc., :		
1.	Green Airways Limited,	1. 50,567;
1.	Heli-Jet Corporation,	1. 48,324;
1.	Helitac Ltd.,	1. 141,874;
1.	Highland Helicopters Ltd.,	1. 584,378;
1.	Huisson Aviation Limited,	1. 1,663,001 ;
1.	V. Kelner Airways Ltd.,	1. 60,553;
1.	Leavens Aviation Inc.,	1. 82,868;
1.	Liftair International Ltd.,	1. 537,843;
1.	MBB Helicopter Canada Ltd.,	1. 114,050;
1.	Navair Ltd.,	1. 80,207;
1.	Newcal Aviation Inc.,	1. 35,114;
1.	North East Air Services,	1. 67,672;
1.	Northern Mountain Helicopters Inc.,	1. 346,675;
1.	Northland Air Manitoba,	1. 405,868;
1.	Okanagan Helicopters Ltd.,	1. 856,891;
1.	PDM National Helicopters Inc.,	1. 35,805;
1.	Paramount Air Ltd.,	1. 168,983;
1.	Patlon Aircraft Industries Ltd.,	1. 47,286;
1.	Peace Helicopters Ltd.,	1. 67,596;
1.	Pole Air Aviation Inc.,	1. 98,878;
1.	Pratt & Whitney Canada Inc.,	1. 169,750;
1.	Pulsar Helicopters Ltd.,	1. 99,458;
1.	Ranger Helicopters Canada,	1. 871,910;
1.	Ratcliff Airways Ltd.,	1. 43,947;
1.	Red Lake Services, Ltd.,	1. 36,821
1.	Rotortech Helicopters Ltd.,	1. 31,001;
1.	Sabourin Lake Airways Ltd.,	1. 142,206;

## Notes on "Civil Aviation"

payments made in 1988 by the Ontario MINISTRY OF NATURAL RESOURCES under "Other Payments"- Materials, Supplies, etc., :		
1.	Service Aerien Gouvernemental,	1. 370,250;
1.	Skycraft Air Transport Inc.,	1. 190,545;
1.	Skytech Aviation Ltd.,	1. 117,858;
1.	Slate Falls Airways Limited,	1. 31,232;
1.	Sunex Aero Engines Ltd.,	1. 281,734;
1.	Supermarine Aircraft Inc.,	1. 119,572;
1.	Sure-Way Aerial Applications Ltd.,	1. 47,093;
1.	Toronto Helicopters Ltd.,	1. 1,761,088 ;
1.	Turbowest Helicopters Ltd.,	1. 778,986;
1.	Uscon Aviation Sales Ltd.,	1. 219,562;
1.	Vancouver Island Helicopters Ltd.,	1. 861,256;
1.	Voyageur Airmotive Ltd.,	1. 61,756
1.	Walsten Air Service,	1. 61,310
1.	Western Propeller (Atlantic) Ltd.,	1. 38,972
1.	Wood Wind Aero Ltd.,	150,907

### CANADIAN AVIATION - 1989

1989 : UK RAF : studies of the RAF's need for *high grade tradesmen* into the next century were carried out in 1989 under the Aircraft Engineering Trades Review (AETR), the results of which were implemented in the UK in April 1991.

### CANADIAN AVIATION - 1990

### CANADIAN AVIATION - 1991

April 1991 : UK RAF The AETR introduce a "single gate, dual stream" method of entry to the flagship aircraft engineering trades, in which:

- A. all tradesmen are now initially trained as mechanics.
- B. After a period of up to two years productive service, the technician stream mechanics (and some of their mechanic stream colleagues) will be selected for "Further Training" to become aircraft technicians.

## Notes on “Civil Aviation”

C. Later, particularly able aircraft technicians will be selected for “Advanced Further Training”, leading to the award of a B.T.E.C “Higher National Certificate” [as seen previously, the HNC is the equivalent of the BSc. Engr.]

### CANADIAN AVIATION - 1992

April 1992 : the Agreement on Trade in Civil Aircraft," the 1992 bilateral agreement between the United States and European Communities (E.C.), is ratified and the formation of the World Trade Organization (WTO) and its Agreement on Subsidies and Countervailing Measures. 1992 Bilateral Agreements Between the United States and the E. C.: “The Airbus Accord”.

Although the negotiations began in 1984 no substantive agreement was created until April of 1992, with the creation of the Airbus Accord.

“The handful of flyers who could fly and fix their aircraft became the core of the fledgling Canadian flying industry”

[were they really licensed for both types of work? - Yes, some were]

The operational effectiveness of a squadron is dependent on numerous factors, but it is primarily related to personnel and equipment. Personnel need to be adequately trained and established in sufficient numbers to enable a squadron to fulfil its operational tasking. Centralized base aircraft maintenance and support organizations can be rationalized only in the context of static base operations, and yet these organizations may be impediments to executing expeditionary operations. To ensure operational effectiveness, the peacetime organization of a squadron and its support elements should reflect its war-time or contingency operational tasking.

If peacetime tasking is different (less demanding) than the wartime/contingency requirement (i.e., a peacetime 8 hour day over a 5 day work week versus a wartime/contingency 24 hour capability 7 days a week) then the squadron establishment needs either to include personnel “overages” to support the wartime/contingency tasking, or to create augmentation positions with trained personnel (including reservists) designated to fill these positions during war/contingency operations (i.e., peacetime establishment + augmentation = wartime/contingency establishment). Aircraft and equipment holdings must be similarly considered, and they need to be provided in both numbers and in effectiveness to permit squadrons to successfully undertake their wartime taskings. (ref : DND, The Aerospace Capability Framework, 19-27)

For example, the consolidation of all personnel and materiel resources into one command, like Bomber Command, reduces the chances that resources with one purpose will be dispersed and wasted. Likewise, activities like training, which is very expensive and resource intensive for air forces, is most efficient and effective when controlled by one organization with the expertise to organise and administer it. Therefore, the evolution of the Canadian Air Force into six communities, that has been described as inefficient stovepipes by some, actually reflects the most effective and efficient way of organizing air forces <sup>299</sup>

Without strategic-level oversight and leadership, the CF air element suffered from declining esprit de corps and serious professional development and doctrinal deficiencies.

Unification and Canada’s Air Forces 1968–1975:  
The CF Air Element and the Fragmentation of Command

Up to this point Canadian defence policy had been based on “a series of ‘contributions’” to alliances and to the UN “that prompted the development of a disjointed defence establishment centred on three services each with a small operational component.” This led to specialization and fragmentation among the three services and Canadian defence policy lacked a central focus. over the last 30 years there has been no central concept to guide planners, but rather continuous competition between the “ideas of unification, integration, public service management, and tri-service traditions

In 1960 the Royal Commission on Government Organization (the Glassco Commission) focussed its attention on the DND.

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<sup>299</sup> Dr Allan English and Colonel John Westrop - CANADIAN AIR FORCE LEADERSHIP AND COMMAND: THE HUMAN DIMENSION OF EXPEDITIONARY AIR FORCE OPERATIONS. 2007

## Notes on "Civil Aviation"

Its report of the Royal Commission on Government Organization identifies numerous shortcomings in the administration of defence, including a dysfunctional committee system, the steady growth of an administrative "tail" in relation to operational "teeth," and lack of executive leadership.

To rectify these problems, the Commission recommended that:

1. the Chairman of the Chiefs of Staff Committee be given executive powers,
2. provided with an appropriate staff, and that
3. the position be re-titled "Chief of Canadian Defence Staffs.

These objectives were to:

1. preserve the peace by supporting collective defence measures to deter military aggression; to
2. support Canadian foreign policy including that arising out of our participation in international organizations, and
3. provide for the protection and surveillance of our territory, our air-space and our coastal waters.

There is only one adequate solution: the integration of ALL of the Armed Forces of Canada under a single "Chief of Defence" and a single defence staff.

1919 - 192x? To survive in the wilderness regions, aircraft needed maintenance.

There were, in fact, two types of "bush flying". One was purely commercial - passengers, mail contracts, freighting - conducted by private enterprise. The other was government sponsored - chiefly aerial mapping and forestry protection - carried on by the Air Board and then nascent RCAF

1980, the U.S. market share of large civil transport sales was 90 percent. By 1992, that percentage had dropped to 70 percent and was in danger of falling even further. technology has become more complex, transferring information about new concepts to the key people in industry has become more of a challenge. For years, the bulk of information about NASA research results was transferred through written documentation, such as technical memoranda, technical papers, articles in professional journals, tech briefs, and through professional conferences. In fact, a 1992 study of NASA's technology transfer activities found that researchers still often viewed successful transfer as writing a report on research results after the work was completed."

Yet there is a growing consensus that technology transfer efforts stand a much greater chance of success if they occur as part of the technology development process, through personal contact between  
src ref NASA SP-4216

### CANADIAN AVIATION - 1993

1993: although it can be a complex and often frustrating process, successful technology transfer is a critical step in advancing America's aeronautical industry. In early 1993, NASA Administrator Daniel S. Goldin stated that "the transfer of our valuable technology ...must be proactively sought and given the highest priority. SRC ref NASA SP-4216

1993 : Sowind Air Ltd. established an approved maintenance organization (AMO 7693) to maintain fixed-wing, piston aircraft

1993 : **Supreme Court ruling in *Edgeworth Construction v. N. D. Lea***

The resulting decision by the Supreme Court of Canada opened the courtroom doors to suits against architects and engineers brought by contractors, subcontractors and others "who had reason to believe the consultant had prepared the bid documents negligently" and thus caused them loss.

The Supreme Court ruling came as a shock to Canadian architects and engineers.

Justice McLachlin held that

"merely affixing his seal to the drawings was not enough to establish a duty of care from the engineer [...] to the contractor"

## Notes on "Civil Aviation"

"The seal is simply evidence that a qualified engineer prepared the drawing,  
but is not a guarantee of accuracy."  
- Supreme Court of British Columbia, Justice McLachlin

However, there was a measure of relief for the employees of consulting companies.  
Justice La Forest held that:

"The plaintiff would have to show that it was **relying on the particular expertise of an individual engineer**  
without regard to the corporate character of the engineering firm."  
- Supreme Court of British Columbia, Justice La Forest

### CANADIAN AVIATION - 1994

### CANADIAN AVIATION - 1995

03 August 1995 : judgment of Justice J. Lally re suit brought about as a result of the death of Henry Janzen, the pilot and sole occupant of a Cessna 150 aircraft owned by the Rideau Gliding Club, which crashed on June 18, 1988 shortly after take-off from Gananoque Airport.

Findings by Justice J. Lally:

1. Frontenac Aviation's aircraft maintenance engineers found negligent for:
  - a) failing to replace the automotive battery lead with a certified aircraft part, and/or
  - b) failing to secure the lead so that there would be no possibility that it would come into contact with the elevator control cable
2. 60% liability against Frontenac Aviation.
3. That the late Henry Janzen, husband of the plaintiff, Pierrette Janzen', was negligent in failing to notice the damaged battery lead and its proximity to the elevator control cable when he removed the battery from the aircraft shortly before the fatal crash.
4. Pierrette Janzen's claim against the Rideau Gliding Club based on the allegation that it is vicariously liable for the negligence of Frontenac Aviation is dismissed of her.
5. Bullock order awarded to Pierrette Janzen against Frontenac Aviation in respect to one-half the costs payable to the Rideau Gliding Club [for the loss of their aircraft] by Mrs. Janzen [due to the contributory negligence of her husband].

Frontenac Aviation subsequently appeals the finding that it [or it's staff] was negligent

Mrs. Janzen subsequently appeals the finding that her husband was found "contributorily negligent"

Mrs. Janzen subsequently appeals the Bullock order for one-half the costs payable to the Rideau Gliding Club.

### CANADIAN AVIATION - 1996

CARs introduced October 1996.

TC officials explained that "audits were suspended for approximately one year following the introduction of the new CARs" in October 1996 to allow both the industry and TC to adjust to the new regulations and to accommodate the heavy workload related to implementation of the new regulatory philosophy and process in TC.

TC uses an "Activity Reporting and Standards System" (ARASS) to assist [TC] management in analysing operational workload and resource requirements.

The ARASS is composed of discretionary and non-discretionary tasks.

1996 : TSB safety recommendations brought to the attention of the Minister of Transport:

A96-11 "risks and consequences of operating in marginal weather conditions" to the attention of the Minister of Transport.

## Notes on “Civil Aviation”

TC, in its response, stated that it would undertake new initiatives in response to recommendations from the Safety of Air Taxi Operations (SATOPS) Task Force and consideration of a targeted national promotion campaign would be done at that time. The SATOPS Report, finalized on 28 May 1998, addresses the issue of flight operations in reduced visibility. It concludes that Apilots are still pushing the weather,@ and recommends that a one-time attendance of the pilot decision-making course may not be sufficient for reduced visibility operations.

A96-12 “require that pilots involved in air taxi and commuter operations receive specialized training, including skills development, in making prudent decisions under deteriorating operational conditions”. TC, in its response, stated that it would task the Canadian Aviation Regulation Advisory Council (CARAC) to study and develop whatever additional specialized training may be required so that pilots involved in air taxi and commuter operations are fully capable of making prudent decisions under deteriorating operational conditions.

November 1996 : Sowind Air Ltd. acquires a “New aircraft” for it’s operation.. however it is a “Type” that it has never operated or maintained before.

The aircraft, which is Registered in the United States, is an Embraer EMB-110P1 Bandeirante serial no. 110-285 and has to be imported into Canada.

During the importation process, the aircraft is weighed by an AMO, and

1. a new Basic Weight and Balance Report and
2. A new Equipment Check List

are prepared, dated 20 November 1996 and signed by a TC rated AME employed by that AMO before being submitted with the importation paperwork for the aircraft.

TC subsequently issues a Canadian C of A to the aircraft, now identified on the Canadian register as C-GVRO.

### CANADIAN AVIATION - 1997

09 December 1997 : C-GVRO an EMB-110P1 Bandeirante operated by Sowind Air Ltd. [Sowind Flight 301] collides with terrain

COLLISION WITH TERRAIN in LITTLE GRAND RAPIDS, MANITOBA. In the accident the captain (the company’s chief pilot) and three passengers were fatally injured, and the first officer and the remaining 12 passengers were seriously injured <sup>300</sup>

There was nothing found in the examination of the wreckage or in the detailed examination of individual components to suggest that the aircraft had experienced a structural failure, flight control malfunction, or loss of engine power that would have caused the observed approach and manoeuvring.

Neither a CVR or an FDR was installed on the aircraft. Consequently, the TSB analysis was primarily concerned with the local weather, the possibility of aircraft contamination, the aircraft’s weight and balance, CFIT, the crew’s decision making and actions, and management.

It was identified during the investigation that:

Weight and Balance Estimates														
Sowind Air Ltd. Embraer EMB-110P1 Bandeirante, C-GVRO, Serial No. 110-285														
Seat 1 frame Weight	Seat 1 Pax Weight	Sex	Seat 2 frame Weight	Seat 2 Pax Weight	Sex	Seat 3 frame Weight	Seat 3 Pax Weight	Sex	Total Row Seat Weight	Total People Weight	calculated total row weight	Total Row Weight (seats and Pax)	Arm in Inches	Moment
14.5	188	M	14.5			14.5	188	M	43.5	376	419.5	419.5	176.8	
14.5		M	14.5			14.5		M	43.5	0	43.5		176.8	

<sup>300</sup> The Transportation Safety Board of Canada Aviation Occurrence Report Number A97Co236 - Ce rapport est également disponible en français.

## Notes on “Civil Aviation”

Weight and Balance Estimates													
Sowind Air Ltd. Embraer EMB-110P1 Bandeirante, C-GVRO, Serial No. 110-285													
Seat 4 frame Weight	Seat 4 Pax Weight		Seat 5 frame Weight	Seat 5 Pax Weight		Seat 6 frame Weight	Seat 6 Pax Weight		Total Row Seat Weight	Total People Weight			
14.5	141	F	14.5	105	U	14.5	141	F	43.5	387	430.5	430.5	207.5
14.5		M	14.5	105	U	14.5		M	43.5	105	148.5		176.8
Seat 7 frame Weight	Seat 7 Pax Weight		Seat 8 frame Weight	Seat 8 Pax Weight		Seat 9 frame Weight	Seat 9 Pax Weight		Total Row Seat Weight	Total People Weight			
14.5	141	F	14.5	188	M	14.5	141	F	43.5	470	513.5	513.5	238.6
14.5		M	14.5		M	14.5		M	43.5	0	43.5		
Seat 10 frame Weight	Seat 10 Pax Weight		Seat 11 frame Weight	Seat 11 Pax Weight		Seat 12 frame Weight	Seat 12 Pax Weight		Total Row Seat Weight	Total People Weight			
14.5	141	F	14.5	188	M	14.5	141	F	43.5	470	513.5	513.5	269.0
14.5		M	14.5		M	14.5		M	43.5	0	43.5		
Seat 13 frame Weight	Seat 13 Pax Weight		Seat 14 frame Weight	Seat 14 Pax Weight		Seat 15 frame Weight	Seat 15 Pax Weight		Total Row Seat Weight	Total People Weight			
14.5	188	M	14.5	188	M	14.5	188	M	43.5	564	607.5	607	301
14.5		M	14.5		M	14.5		M	43.5	0	43.5		
											322.5	2484	

The passenger weights used were “standard” [at the time] winter weights of:

- a) 188 pounds for an adult male,
- b) 141 pounds for an adult female, and
- c) 75 pounds for a child.

Important Note : The “total” passenger and seat weights include seat weights of 43.5 pounds per row. [or 14.5 lbs / pax seat]  
It would appear during the investigation that “Actual” passenger weights were not taken, however, at least two of the passengers weighed nearly double the standard weight (300+ and 255 pounds).

The baggage as weighed at the accident site = 359.0 pounds at 361.5 inches, however the flight manifest indicated a baggage weight of 295 pounds.

The cargo as weighed at the accident site = 574.0 pounds 361.5 inches, however the flight manifest indicated a cargo weight of 150 pounds.

Maximum take-off weight: 12 500 lb

Maximum ramp weight: 12 566 lb

Maximum landing weight: 12 015 lb

C of G limits: 255.5 inches to 272.0 inches aft of the datum at 12 500 lb (9.5% to 31% MAC)



## Notes on “Civil Aviation”

Weather conditions were conducive to somatogravic illusion in whiteout conditions.  
It is likely that the captain flew the aircraft into the terrain under the illusion that the aircraft was climbing.

The TSB determined that C-GVRO was operated for approximately one year, and over a wide range of loads, without accurate weight and balance calculations.

Although the weight of the aircraft at impact could not be determined with precision, it was determined to be 495 pounds to 1095 pounds greater than its maximum allowable landing weight, and 10 pounds to 610 pounds greater than its maximum allowable take-off weight.

In 1993, Sowind Air Ltd. had established an approved maintenance organization (AMO 7693) to maintain fixed-wing, piston aircraft. The company employed two licenced engineers and two apprentice engineers. Neither the company's AMO nor the company's maintenance staff were certified to maintain EMB-110P1 Bandeirante types. Maintenance of the EMB-110P1 Bandeirante was contracted to another AMO, Northeastern Aircraft Sales & Service, which held the appropriate qualifications. Sowind Air Ltd. subsequently produced a new maintenance control manual (MCM) as required by CAR 726.08. The MCM was approved by TC on 14 November 1997 and reflected that an approved maintenance agreement was in effect with Northeastern Aircraft Sales & Service for maintenance of the Bandeirante.

There were concerns raised by the maintenance dept. that company pilots had moved equipment between aircraft without coordination with / notification of the maintenance department .

The review of “initial weight and balance reports” for C of A is deemed a “discretionary task” dependent on the workload of the assigned TC inspector.

At one time, TC attempted to review all weight and balance reports submitted by operators, but found the workload prohibitive.

The weight and balance report for the Bandeirante owned by Sowind Air Ltd was received by TC and was [simply] placed in the aircraft's file. The information contained within the [weight and balance report] reports was not reviewed by an inspector in a TC office.

A significant number of audit findings, made during the post-occurrence audit, indicates that the company had difficulty with the transition from an air taxi operator to a commuter operator. Given that TC officials were of the opinion that the company had been well-managed and could cope with the transition, it is likely that the transition difficulties faced by the company were underestimated by TC.

TC's weight and balance policy allowed the basic weight and balance calculations for commuter type aircraft to be accepted without any [TC]review for accuracy.

At both take-off and landing [the crash] C-GVRO was about 1000 pounds heavier than the maximum allowable weight.

The weight and balance report that was submitted to Transport Canada, required for the importation of C-GVRO, contained numerous discrepancies; the report was not reviewed for accuracy by Transport Canada.

The emergency locator transmitter (ELT) produced a very weak signal because the antenna cable had been installed with little slack, and it pulled out of the antenna fitting during impact.

A significant number of discrepancies developed (see Appendix C) and were not detected or resolved.

### Company Management

Company management, as assessed by TC audits and inspections, had been deemed satisfactory before the introduction of the Bandeirante.

As revealed by the post-occurrence TC audit, the management of the company had not dealt effectively with the introduction of the Bandeirante.

While the president stated that the policy was to provide a higher standard of service, and that the company's first concern was safety, safety was compromised in three areas of management responsibility: training and standards, operations, and maintenance. The investigation revealed that the chief pilot's operational control diminished during the introduction of the Bandeirante.

Over time:

## Notes on "Civil Aviation"

1. the weighing of cargo became less effective,
2. the weighing of passenger baggage became less effective, and
3. GPS was used routinely on approaches in IFR conditions contrary to the provisions of the CARs.

The "operations manager" exercised little influence in the commuter operations, primarily flying in the air taxi operation and providing little supervision.

There were inadequacies in TC's oversight, whereby the post-certification audit of the company was not conducted, thus eliminating an important mechanism by which TC could have found, and addressed, the inadequate safety management practices, non-conformance with pilot training requirements, and related operating irregularities

Discrepancies noted in the Basic Aircraft Weight and Balance Report and Equipment Check List, dated 20 November 1996 prepared during the re-weigh at import:

1. The basic equipment check list was not updated as to items installed at the time of the re-weigh.
2. Items such as the portable toilet and divider panel were still being shown as installed when they were not.
3. The weight and balance report datum location [the main wheel axle] used to compute the new weight and balance report was incorrect.
4. A weight and balance report datum location 306.8 inches from rear jack point should have been used to compute the new weight and balance report.
5. The weight and balance report weighing diagram was incorrect; it should have been the jack point diagram Fig. 6.2, not 6.3, [which is?] as provided.
6. The moment calculation of 10.7 for the nose wheel weight was incorrect on the weight and balance report.
7. The moment calculation for the nose wheel should have been  $1080 \times 99.3 = 107.2$  (lb x in/1000)
8. The total moment and arm calculations on the weight and balance report were affected by the incorrect nose wheel moment calculation.
9. The C of G location stated on the report reflected a position 255.2 inches aft of the datum at 9.1% MAC.
10. A C of G location 277.9 inches aft of the datum at 37.9% MAC should have been reflected on the report.
11. The scale figures, taken during the re-weigh, were incorrectly transcribed onto the weight and balance form, making the subsequent weight and balance calculations meaningless.
12. No moment arm measurement was provided for the 6th row seat installation.
13. No conversion formula was provided on the balance sheets to calculate % MAC.

As a result of the weight and balance findings noted by the TSB, TC issued findings against the AME who signed the weight and balance completed at importation and the AMO who accomplished the work.

....

### CANADIAN AVIATION - 1998

18 June 1988 : Ontario Court of Appeal hearing re : Cessna 150 owned by the Rideau Gliding Club crashes shortly after take-off from Gananoque Airport. COURT OF APPEAL FOR ONTARIO : Justices McMurtry C.J.O., Laskin and Borins JJ.A. This appeal and cross-appeal from the judgment of Lally J. dated August 3, 1995

The opinion of McMurtry C.J.O was that:

1. **the employment** of Frontenac Aviation by the Rideau Gliding Club **to perform work** [the work being the "condition and conformity inspection" and the "100 hour inspection" of the Club's C-150] **did not fall into the "category of work or activity" that was inherently or necessarily dangerous.** The cross-appeal against the Rideau Gliding Club was therefore dismissed.
2. the work of "inspecting" [...] did not represent "activity that was inherently dangerous" while **the work performed** in the St. John (City) and Schubert cases was.
3. the consequences of a negligent "condition and conformity inspection" can be catastrophic for the users of the aircraft. The finding of negligence [for not rectifying the problem or bringing it to the owner's attention for resolution] by Frontenac Aviation was therefore held.
4. the consequences of a negligent "100 hour inspection" can be catastrophic for the users of the aircraft. The finding of negligence [for not rectifying the problem or bringing it to the owner's attention for resolution] by Frontenac Aviation was therefore held.

## Notes on “Civil Aviation”

Citations from the John (City) and Schubert cases:

“where work is necessarily attended with risk, the person causing it [the work] to be done has *the duty of seeing that effective precautions are taken*, and that person *cannot escape from the responsibility* by delegating it to a contractor”<sup>301</sup>  
[The employer's] vicarious responsibility arises, however, *where the danger of injurious consequences to others from the work ordered to be done is so inherent in it that to any reasonably well-informed person* who reflects upon its nature *the likelihood of such consequences ensuing*, unless precautions are taken to avoid them, *should be obvious, so that were the employer doing the work himself his duty to take such precautions would be indisputable*.<sup>302</sup>

That *duty imposed by law* he cannot delegate to another, be he agent, servant or contractor, *so as to escape liability for the consequence of failure to discharge it*.<sup>303</sup>

*That [...] is a principle applicable in such a situation whatever be the nature otherwise or the locus of the work out of which it arises*.<sup>304</sup>

Canadian courts such as in the Schubert case have referred to English courts when making determinations:

“An employer cannot divest himself of liability in an action for negligence by reason of having employed an independent contractor, where the work contracted to be done is necessarily dangerous, or is from its nature likely to cause danger to others unless precautions are taken to prevent such danger”<sup>305</sup>

*“the question of whether a duty of care arises will depend upon the circumstances of each particular case, not on predetermined categories and blanket rules as to who is, and who is not, under a duty to exercise reasonable care.”*<sup>306</sup>

Consider the following suppositions - would they hold if tested by the supreme court:

“where work [aircraft inspection, repair, maintenance overhaul etc., etc.] is necessarily attended with risk [the potential that something is done wrong or overlooked?] , the person [the Minister / aircraft owner] causing it to be done has the duty of seeing that effective precautions are taken, and that person [the Minister / aircraft owner] cannot escape from the responsibility by delegating it to a contractor [the AME?]”

Similarly, by ordering work [by way of the aeronautics act, air regulations and CARs] that involved construction, modification, repair, overhaul, dis-assembly and inspection of aircraft to ascertain air-worthiness, does the government have a duty to take precautions to provide properly educated, skilled and trained technicians and inspectors? Has the government breached this duty by not taking active steps to ensure the training and licensing of these two separate classes of persons was proper ?

15 October 1988 :

01 August 1998 : Expiration date of the TC granted an exemption for operators to comply with the requirement of CAR 605.33 (2) that a CVR be installed in particular types of aircraft.

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<sup>301</sup> Hogg J. in Schubert v. Sterling Trust Corp., [1943] O.R. 438 (H.C.J.).

<sup>302</sup> Anglin C. J. in St. John v. Donald, [1926] S.C.R. 371

<sup>303</sup> Anglin C. J. in St. John v. Donald, [1926] S.C.R. 371

<sup>304</sup> Anglin C. J. in St. John v. Donald, [1926] S.C.R. 371

<sup>305</sup> Hogg J. in Schubert v. Sterling Trust Corp., [1943] O.R. 438 (H.C.J.) quoting from the reasons of Meredith C.J.O. in McLean v. Crown Tailoring Co. (1913), 29 O.L.R. 455 at 474, citing 21 Halsbury's Laws of England, 1st ed

<sup>306</sup> The Supreme Court of Canada : London Drugs Ltd. v. Kuehne & Nagel International Ltd., [1992] 3 S.C.R. 299, per Iacobucci J. at 408.

CANADIAN AVIATION - 1999
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1999 :

12 February 1999 : Ontario Court of Appeal : McMurtry, Chief Justice - Ontario (C.J.O) Findings:

1. The appeal of Mrs. Pierrette Janzen [ Plaintiff/Respondent] from the finding that her husband was contributorily negligent and *with respect to the Bullock order* **is allowed** with costs payable by Frontenac Aviation.
2. The appeal of Mrs. Pierrette Janzen from the dismissal of her claim against the Rideau Gliding Club [ Defendant] **is dismissed** with costs.
3. The appeal of 548975 ONTARIO INC., aka “Frontenac Aviation” [Defendant/Appellant] **is dismissed** with costs.

June 1999 : UK

“the shortage of engineers is mainly of industry's own making, which UK-CAA agrees with” <sup>307</sup>

June 1999 : UK

“To invest in training will help to secure the future of air transport undertakings, but that has to be managed in such a way to make an attractive career for young people or they will continue to drift into Financial Services, Computers and Marketing, which are, on the surface, more attractive and better paid” <sup>308</sup>

“Whilst we hear of some concerns about AN 47, most people agree with it.

Some industry managers however have apparently rejected advice from engineers that they [managers?] were unfit to continue and placed them [the engineers?] under undue pressure to reconsider their position.

That is unacceptable behaviour when it is now widely accepted that a safety culture and the management of safety are the important issues.” <sup>309</sup>

1999 :

Canadian Court cases where Licensed AMEs were held liable:

*Janzen v. Kovachik Aircraft Services Ltd.* (1999), 86 A.C.W.S. (3d) 248 (Ont. C.A.)

In *Janzen v. Kovachik Aircraft Services Ltd.*, an aircraft gliding club “hired a **survey company** to inspect a plane” that it owned. **Seven months** after the [surveyor's] report which indicated that the plane was in good condition was issued, the aircraft crashed, killing one man.

The Canadian Transportation Safety Board investigation revealed that the cause of the accident was “a broken elevator cable, due to contact between the cable and a battery lead” [cable arced and melted] .

The wife of the deceased sued the gliding club and the “**survey company**” [for what? wrongful death? loss of comfort?]

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<sup>307</sup> Tony Ingham Chief Surveyor UK-CAA, UK CAA - CHIRP 1999

<sup>308</sup> “The Challenge of the Future” A paper on the shortage of maintenance personnel, the absence of adequately supported training schemes and the implications for industry in the future. Royal Aeronautical Society, June 1999

<sup>309</sup> Tony Ingham Chief Surveyor UK-CAA, UK CAA - CHIRP 1999

## Notes on “Civil Aviation”

At trial, the judge held the “surveyors” [persons who accomplished the inspection] of the aircraft 60% liable, based on the finding that an “automotive” battery lead had been installed, rather than an “aircraft” lead.

The error [in installing the automotive part] was made [probably by a club member - pilot] prior to inspection.

The judge held that:

1. “the surveyor [who conducted the inspection for “Airworthiness”] was therefore negligent”.
2. “The deceased [pilot?] was contributorily negligent for *not having noticed the problem during his routine inspections* of the aircraft.”

The judgement against the “Surveyor” was subsequently appealed [by the surveyor / L-AME]

On appeal, the Ontario Court of Appeal :

1. affirmed the ruling against the surveyors, and
2. overturned the finding of contributory negligence against the deceased [pilot].

It was held by the Court that “the husband [pilot] did not have a duty to inspect the lead” and [that the club/pilot ] was entitled to rely upon the expertise of the licensed aircraft maintenance engineer[s] who performed the inspection. (WHY ?)

The Ontario Court of Appeal also affirmed the trial judge’s ruling that “the flying club was not vicariously liable for the negligence of the inspectors it hired”. (WHY?)

The full liability for the loss was therefore on the inspection company.

In reading these 2 decisions, consider the following:

1. what does the aircraft log book and maintenance record identify?
2. what maintenance was performed?
3. Would any receipts re-imbursed to a club member for a “battery Cable” post the date of inspection be sufficient grounds to overturn the decision?
4. What is the period or duration of the inspection by an AME?
5. Why was the “husband” / Pilot later determined to NOT have a duty to inspect?
6. Is an AME responsible for any potential actions taken prior to / post their inspection?
7. What is the L-AME legally required to accomplish during an “Inspection” for airworthiness?

1999 :

“Limited companies **cannot exercise professional functions** except through “qualified individual employees”<sup>310</sup>

“**Those employees must realise it is their skill and experience the clients are engaging and will rely on.**

They [the employees of the limited company? the limited company itself? or both?] therefore owe a concomitant duty of care to those clients and are potentially liable in tort if they fail to meet that duty”<sup>311</sup>

“employees may be held personally liable for negligence in failing to meet duty of care owed to clients”<sup>312</sup>

Justice Edwards reviewed the decisions of the B.C. Court of Appeal in:

1. *R. v. R.B.O. Architecture Inc.*, and
2. *Boss Developments Ltd. v. Quality Air Maintenance Ltd*<sup>313</sup>.

In both decisions, the B.C. Court of Appeal had considered *Edgeworth*.

*Boss Developments Ltd. v. Quality Air Maintenance Ltd,*

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<sup>310</sup> Supreme Court of British Columbia, Justice J. Edwards, February 22, 1999

<sup>311</sup> Supreme Court of British Columbia, Justice J. Edwards, February 22, 1999

<sup>312</sup> Supreme Court of British Columbia, Justice J. Edwards, February 22, 1999

<sup>313</sup> <http://www.courts.gov.bc.ca/jdb-txt/sc/94/00/s94-0031.htm>

## Notes on “Civil Aviation”

In *Boss Developments Ltd. v. Quality Air Maintenance Ltd.*, Justice Gibbs found that “an engineer could be personally liable to an aircraft purchaser for signing a report indicating an aircraft was properly maintained when it was not, although his employer, not he [the individual engineer], had a “contractual relationship” with the vendor to inspect the aircraft”.

There was nothing in the relevant contract [no language] purporting to limit the duty of care of the employer or of its employees.

With respect to the “individual employee,” Justice Gibbs noted that he [the employee] was liable because “Only an individual can be qualified as an aircraft maintenance engineer in this field of special skill and knowledge [...] it follows that it is the individual mechanic who certifies [who is the person] whose skill is being relied upon.”

In *R. v. R.B.O. Architecture Inc.*,

Justice Edwards states, “while it was true that [the] Strata did not engage CSA because it intended to rely on the skill of any individual it could identify by name, it was equally true that CSA held itself out as a firm with *engineers, architects and technologists* [...] [who] focus their interests exclusively upon [resolving?] the very problem [building deficiencies?] that [the] Strata contracted with CSA to address.”

Additionally, Justice Edwards found that:

1. There was no question that:
  1. all three of the [CSA] employees had a degree of experience, and
  2. all three of the [CSA] employees had a degree of technical skill, and that
  3. each of the three of the [CSA] employees was actively involved in the survey, and
  4. each of the three of the [CSA] employees was actively involved in the preparation or presentation of the report.
2. They [the CSA employees] must have known Strata would rely on their report
3. The extent of their [the CSA employees] involvement distinguished them from the engineers in *Edgeworth*.
4. Because, in *Edgeworth*, the Engineers “merely affixed a seal” to the contract documents [but had nothing to do with the end report?].

How does *Edgeworth* compare with the ruling re the Sowing EMB-110 crash post the importation and weighing which was accomplished by one Engineer, yet certified by another?

### CANADIAN AVIATION - 2000

19 April 2000 :

*Forsyth et al v Sikorsky et al*, 2000 BCSC 642 <sup>314</sup>

1. Sikorsky manufactured helicopter registration C-GHOG, bearing serial number 58-701, during the 1950's as one of some 2,200 helicopters designated the [type] H34.
2. The majority of these craft were used for military purposes, with 10 to 15 percent destined for the commercial market.
3. C-GHOG flew with the German military in the 1950s and 1960s before being taken to Brazil where Airplane Sales International Corp., of California, ("Airplane Sales") acquired the craft together with a number of spare parts from the Brazilian government.
4. Airplane Sales brought C-GHOG to North America and commenced converting it and 50 other military H34's from a military H34 to a civilian S58T for commercial use, following a Sikorsky program.
5. The military H34 to a civilian S58T conversion included the replacement of the original single piston radial engine with 2 PT6 turbine power plants aka the “Twin-pack”.
6. Tundra [Helicopters] president Steve Harrison purchased C-GHOG in August 1993 from Airplane Sales for USD \$780,000 including a spare parts package ("the Brazilian spares") valued at CAD \$300,000.
7. On 24 October 1995, Messrs. Forsyth and Kokoszka noticed a vibration in C-GHOG and they landed nearby for inspection.
8. inspection [was accomplished] by Mr. Schlienzy, a licensed aircraft maintenance engineer ("AME"), and his apprentice, Greg Hall, who were assigned by Tundra to maintain C-GHOG.
9. The pilots concluded the cause of the unusual vibration ought to be determined and resolved, if possible, before they resumed logging operations.

<sup>314</sup> <http://www.cfmlawyers.ca/practice-areas/aviation-law/aviation-law-selected-judgments/>

## Notes on “Civil Aviation”

10. Messrs. Schlien and Hall inspected the aircraft “on the ground”, particularly the tail-rotor area - which was suspected to be the source of the vibration.
11. Messrs. Schlien and Hall were unsuccessful in isolating the vibration during their ground inspection.
12. The pilots then flew C-GHOG with Mr. Schlien in the craft's rear section near the tail-rotor to try to determine the source of the vibration while they went to pick up a load of logs.
13. Mr. Forsyth piloted C-GHOG to pick up a load and fly to the log landing site.
14. As Mr. Forsyth placed the logs on the ground, he felt a massive vibration, heard a bang, and saw debris falling from the helicopter.
15. The pilots directed [flew] GHOG to a grassy area where it landed heavily, seriously injuring the three plaintiffs.
16. The crash destroyed GHOG.

### CANADIAN AVIATION - 2001

### CANADIAN AVIATION - 2002

### CANADIAN AVIATION - 2003

### CANADIAN AVIATION - 2004

### CANADIAN AVIATION - 2005

*“helicopter plummets from the sky,  
a long trail of grey-black smoke spewing behind it,  
crashed in an explosion and fireball, killing both occupants”*

September 2002 :

The B.C. Supreme Court was to examine whether a Canadian Federal regulatory agency [Transport Canada] should be held responsible <sup>315</sup>for the deaths of:

Pilot : Robert Honour,

Passenger : Les Chadwick

Transport Canada was accused of breaking its own rules by licensing a helicopter service company "with an extensive history of unsafe practises" in a civil suit brought by Mr. Honour's family

But at the last minute, the agency [TCCA] avoided potentially embarrassing questions about its air safety operations, agreeing to a confidential out-of-court settlement just before the trial started.

The following points are noteworthy re TCCA cases:

1. how much Ottawa [TCCA] paid out to the Honour family was not disclosed.
2. Transport Canada admitted no liability.

*“Had the suit gone ahead, it would have been a rare test of how much accountability can be demanded of government agencies, as well as raising issues about the oversight of air transportation safety in Canada”* <sup>316</sup>

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<sup>315</sup> <http://www.theglobeandmail.com/news/british-columbia/transport-canada-makes-out-of-court-deal-in-pilots-death/article579357/>

<sup>316</sup> Gerard Chouest, Toronto lawyer, specialist in aviation law

## Notes on "Civil Aviation"

"It's not in Transport Canada's best interest to have this issue discussed any more than necessary. They don't want to call attention to the fact that they have some vulnerabilities." <sup>317</sup>

Art Comeault, the owner of the service company, did not settle out of court, but after a brief two-day hearing in Vancouver last week, the judge found him liable and ordered him to pay \$645,000 in damages.

Settling lawsuits has been a pattern at Transport Canada.

An examination by The Globe and Mail of the federal Public Accounts over the past decade uncovered Federal Public Accounts / Treasury made at least nine "payments of claims" by Transport Canada to individuals as a result of aircraft accidents, totalling close to \$1.7 million.

Transport Canada's "role" in each accident was kept confidential.

a long paper trail of inspection reports by the Transportation Safety Board brings up questions that Ottawa might not have wanted to air in court - particularly, how it oversees the roughly 900 aeronautic companies across the country licensed to repair and maintain aircraft. <sup>318</sup>

The official TSB report [Report No. ] :

1. helicopter had "sustained substantial damage" after a crash in the United States in 1979 after losing engine power.
2. helicopter had "sustained substantial damage" in a rollover accident in Canada in 1997.
3. There is no record of any "accident" in the ... logbooks," as required by the Regulations.
4. Determined "a fuel-pump failure led to loss of engine power and a fire" in the helicopter.
5. maintenance actions to correct fuel pump defects were not completed
6. maintenance actions [on the aircraft] by Mr. Comeault and his company, A&L Aircraft were not completed.
7. Mr. Comeault, was licensed aircraft maintenance engineer since 1985
8. Stated that "The helicopter was not serviced or maintained in accordance with existing regulations,"
9. TSB investigators concluded caution in all their reports that their findings are not meant to "assign fault ... or criminal liability."

When contacted by the Globe & Mail, Mr. Comeault stated: <sup>319</sup>

1. TSB are a bunch of jerks
2. They make these stupid statements and then they walk away.
3. They don't prove it.
4. That helicopter was a good helicopter
5. pilot error caused the crash.
6. They (aircraft) all have problems.
7. It's a mechanical machine, you can't tell when it's going to have a problem or not.

### CANADIAN AVIATION - 2006

### CANADIAN AVIATION - 2007

### CANADIAN AVIATION - 2008

13 March 2008 :

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<sup>317</sup> Gerard Chouest, Toronto lawyer, specialist in aviation law

<sup>318</sup> <http://www.theglobeandmail.com/news/british-columbia/transport-canada-makes-out-of-court-deal-in-pilots-death/article579357/>

<sup>319</sup> <http://www.theglobeandmail.com/news/british-columbia/transport-canada-makes-out-of-court-deal-in-pilots-death/article579357/>



## Notes on "Civil Aviation"

New Zealand,<sup>320</sup>

A maintenance company owner and a licensed aircraft maintenance engineer [who was employed by the company] are convicted of manslaughter in the death of Philip Heney, a helicopter pilot.

Philip Heney, was killed when a tail component failed while he was landing his Robinson R22 southwest of Nelson, NZ, in August 2005.

He had picked up the helicopter from the maintenance facility earlier the same day.

The Crown prosecutor successfully argued that the defendants had failed to ensure that the work done on the helicopter had been directly supervised by a licensed aircraft maintenance engineer and inspected twice by qualified engineers.

### CANADIAN AVIATION - 2009

### CANADIAN AVIATION - 2010

### CANADIAN AVIATION - 2011

### CANADIAN AVIATION - 2012

### CANADIAN AVIATION - 2013

04 January 2013 : Letter sent to re AME Apprentice Tax incentives

02 February 2013 : Ministerial Correspondence 2013-0474471M4 - Gail Shea, M.P

12 February 2013 Ministerial Correspondence 2013-0474471M4 - Apprenticeship Job Creation Tax Credit<sup>321</sup>  
CRA Tags 127(9), 127(5), ITR 7310

Summary Under Tax Topics - Income Tax Regulations - Regulation 7310

Principal Issues:

1. For purposes of an employer computing its eligible salaries and wages payable *for purposes of claiming the apprenticeship job creation tax credit, whether an employee who is an apprentice in a federally regulated trade* such as an aircraft maintenance engineer licensed by Transport Canada *can be considered an "eligible apprentice"* within the meaning of subsection 127(9) of the Income Tax Act.
2. Whether *an individual apprenticing to become licensed as an aircraft maintenance engineer is entitled to:*
  1. the apprenticeship incentive grant, and/or
  2. the apprenticeship completion grant.

Position: 1. No. - [see reason 1]

Position: 2. No. - [see reason 2]

Reasons:

1. The definition of "eligible apprentice" in subsection 127(9) of the Act refers to "a trade prescribed in respect of a province or in respect of Canada."
  1. *It is interpreted to refer to* a trade prescribed in respect of a province and/or territory or a trade prescribed in *respect of Canada*.

<sup>320</sup> <https://www.helicoptersmagazine.com/procedures/company-owner-and-ame-guilty-of-manslaughter-in-new-zealand-799#sthash.l7oiyrGj.dpuf>

<sup>321</sup> <https://taxinterpretations.com/cra/severed-letters/2013-0474471m4>

## Notes on "Civil Aviation"

2. Although an aircraft maintenance engineer is a trade that is federally regulated and as such, *can be considered to be a trade in respect of Canada*, it is not a trade "**prescribed**" in respect of Canada.
3. Section 7310 of the Income Tax Regulations defines what is a "**prescribed trade in respect of a province**" (i.e., the Red Seal trades) and in that regard, an aircraft maintenance engineer is not a Red Seal trade.
4. As currently enacted, the Regulations are silent on what is a "**prescribed trade in respect of Canada**" and in this regard, there are no draft amendments to the Regulations currently proposed.

2. Not a Red Seal trade.

Response :

XXXXXXXXXX

Dear XXXXXXXXXXXX:

The office of your member of Parliament, XXXXXXXXXXXX, sent me a copy of your correspondence, which I received on January 4, 2013, about the apprenticeship job creation tax credit (AJCTC) and the apprenticeship incentive.

The **Income Tax Act** allows an employer to claim the AJCTC for its eligible salary and wages payable to eligible apprentices.

The Act defines an "eligible apprentice" as an individual who is employed in Canada in a trade "**prescribed** in respect of a province or **in respect of Canada**" during the first 24 months of his or her apprenticeship contract.

This contract must be registered with a provincial, territorial, or federal government under an apprenticeship program designed to certify or license individuals *in the trade*.

According to the Income Tax Regulations, a "prescribed trade in respect of a province" is a Red Seal trade under the Interprovincial Standards Red Seal Program.

*For a trade to be designated as a Red Seal trade, a number of provinces and territories should already have independently designated that trade for apprenticeship training and certification.*

It is up to the industry to submit a request for the designation of a trade under the Red Seal Program.

Your concern relates to apprentices training to be licensed by Transport Canada as "aircraft maintenance engineers".

This federally regulated trade is **not** a designated RedSeal trade and "the Regulations" do not define what a "prescribed trade in respect of Canada" is.

Since this trade is **not** a *prescribed trade* in respect of a province or Canada, an apprentice in this trade does not meet the Act's definition of "eligible apprentice."

Therefore, an employer cannot claim the AJCTC for apprentices in this trade.

I am unaware of any draft or proposed amendments to the Regulations at this time.

The Department of Finance Canada is responsible for setting tax policy concerning whether the AJCTC should include an employer's salaries and wages payable to apprentices in federally regulated trades.

Human Resources and Skills Development Canada (HRSDC) administers tax incentives for apprentices, such as the apprenticeship incentive and the apprenticeship completion grants.

To qualify for these grants, the apprentice must meet several conditions, including being registered in a Red Seal trade. Since the aircraft maintenance trade is not a Red Seal trade, an aircraft maintenance engineer apprentice would not qualify.

**HRSDC** is responsible for economic development policy concerning whether the eligibility for these grants should include apprentices in federally regulated trades.

You are concerned that the shortage of licensed aircraft maintenance engineers will only get worse.

However, I must confirm that there are currently no federal tax incentives to help employers wanting to hire and train more aircraft maintenance engineers or to entice individuals to choose a career in the aircraft maintenance trade.

## Notes on “Civil Aviation”

Since the concerns you raise are **policy** matters that are the responsibility of Finance Canada and HRSDC, I am forwarding a copy of our correspondence to the Honourable James M. Flaherty, Minister of Finance, and the Honourable Diane Finley, Minister of Human Resources and Skills Development, for their consideration.

I trust that the information I have provided and the referrals are helpful.

Yours sincerely,  
Gail Shea, P.C., M.P.

C.C.:

1. The Honourable James M. Flaherty, P.C., M.P.  
Minister of Finance  
House of Commons  
Ottawa ON K1A 0A6
2. The Honourable Diane Finley, P.C., M.P.  
Minister of Human Resources and Skills Development  
House of Commons  
Ottawa ON K1A 0A6
3. XXXXXXXXXX  
Tim Fitzgerald, CGA  
(613) 941-7239

Ref : 2013-047447

## “Prescribed Trades” - Canada

Power and procedure of court of survey: with respect to the court of Survey <sup>322</sup> :  
Per the Merchant shipping act:

### The Judge:

1. shall have the same power as the board of Trade
2. and his assessor shall have - for the purposes of this act - all the powers of an inspector appointed by the board of trade under the merchant shipping act
3. may appoint any competent person or persons to survey the ship and report thereon to the court
4. shall have the same power of the board of trade to order the ship detained or released (unless one of the surveyors concur with the detention, the ship shall be released [...] )

## highly technical legislation

This highly technical legislation <sup>323</sup> is a direct descendant of the first Canada Shipping Act of 1906 which was revised in 1927 and re-enacted in 1934. With the many changes which have taken place in shipping since the thirties a new and modern act is overdue. Despite these changes, and the complexities of International Conventions, the 1934 enactment, although revised in 1952, has already lasted longer than the 28 years separating it from the first Canadian act of 1906. This turn, by way of the British Merchant Shipping Acts of 1894 and 1854, contains phrases whose origins are lost in the antiquities of sea law.

When the Parliament at Westminster brought in the Merchant Shipping Act of 1854, the intention of the legislators was to regulate the conduct of British shipping throughout the world and it mattered little whether vessels were owned in England or Canada, or in any other of the British possessions for that matter, for all were trading under the same flag in an economic system which was still cast, to a great extent, in the mould of the navigation acts of the preceding century. In the year 1854 none of the Dominions were in existence and, while Canadian provinces passed many acts relating to local shipping, they were void, if in a

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<sup>322</sup> Acts of the parliament of the dominion of Canada Vol 1-2. Brown Chamberlin, Law Printer to the Queen's Most Excellent Majesty, 1877

<sup>323</sup> USQUE AD MARE - A History of the Canadian Coast Guard and Marine Services by Thomas E. Appleton. [http://www.ccg-gcc.gc.ca/eng/CCG/USQUE\\_Shipping\\_Act](http://www.ccg-gcc.gc.ca/eng/CCG/USQUE_Shipping_Act)

## Notes on "Civil Aviation"

specific case, to use the legal term, they were "repugnant" to the law of England. This indeed had held from an early stage of colonial development under a theory that the acts of any colonial legislature were void if they conflicted with those of the Parliament of the United Kingdom.

This position was widened somewhat by the **Colonial Laws Validity Act of 1865** which, to remove unrealistic limitations in the jurisdiction of colonial legislatures:

- a) empowered colonial legislatures to make laws even though repugnant to English law, and
- b) declared that colonial laws would be invalid only to the extent of their conflict with the relevant British act.

Thus, under the Colonial Laws Validity Act, the legal position remained that statutes in respect of merchant shipping passed by the Parliament of the United Kingdom, whether before or after the constitutional date of 1867, were supreme over repugnant colonial laws.

In matter of certificates for masters and mates for example, we have noted that *Ottawa was unable to legislate for the introduction of examinations for certificates for masters and mates in Canada until the Parliament at Westminster authorized such a procedure.*

the Merchant Shipping (Colonial) Act of 1869 enabled the legislature of a British possession to

- a) pass laws for the regulation of its coasting trade,
- b) establish registrars of British shipping, and to
- c) declare that examinations of like standard to those held in Britain could be acknowledged by the granting of colonial certificates of the same force.

By the time that the Parliament of Canada passed the first Canada Shipping Act of 1906, the **constitutional position** had changed in fact if not in theory, and the Canada Shipping Act of 1906, though based broadly on the Merchant Shipping Act, was framed to meet Canadian requirements and to incorporate Canadian legislation.

**In recognition of the changing constitutional positions of all the British Dominions**, the United Kingdom Parliament gradually ceased to exercise its rights over colonial shipping and, **from 1911 onwards, all shipping legislation passed at Westminster was so framed as not to extend to the Dominions.**

After the first world war, progress towards Canadian autonomy became more apparent.

Following the Imperial Conferences of 1926 and 1930, recommendations were confirmed and ratified by the passing of the **Statute of Westminster in 1931** which, among other portentous matters, repealed the Colonial Laws Validity Act of 1865 and declared that henceforward no law passed by a Dominion Parliament would be void or inoperative on the grounds of repugnance to the law of England.

In the negotiations leading up to the Statute of Westminster much thought was given to the question of shipping, and a **conference on dominion merchant shipping legislation** was held in London in 1929.

1929 : Canada was represented by the then **Minister of Justice, the Hon. Ernest Lapointe**, who was particularly well qualified to review the position from his experience as [former] **Minister of Marine and Fisheries.**

*As a result of this conference, the way was cleared for the full and complete legislative authority of each dominion over all ships within its territorial waters or engaged in its coasting trade, and over its own ships within in international waters, wherever they might be.*

*There was a strong presumption in favour of concerted action between countries of the British Commonwealth of Nations as to the uniformity of their laws*, a principle which is still regarded today in matters of common interest although of diminishing importance in the face of wider international co-operation and a redistribution of shipping influence throughout the world.

But, in tracing *the origins of the Canada Shipping Act from its first root in the soil of English maritime law*, we must not lose sight of two other important roots, old and new, which have enriched the Act of 1906.

The second and older root springs from Canadian laws which, enacted by colonial and provincial legislatures from the late eighteenth century onwards, were followed, after Confederation, by a series of acts of the Canadian Parliament.

These enactments, covering many different aspects of shipping law, were necessary to amplify and extend the general philosophy of the British Merchant Shipping Act in terms of Canadian conditions, and they form a very important component of the Act of 1906 which, in effect, consolidated Canadian and British enactments.

## Notes on “Civil Aviation”

The third and most recent root, resulting from the birth of modern shipping technology, which may be said to date from 1914 when the first International Convention on the Safety of Life at Sea was held, stems from the work of many nations.

**This meeting [which illuminated a sea of hitherto pragmatic regulations by the light of technical method and reasoning, (meaning that up until this point regulations dealt with things sensibly and realistically in a way that is based on practical rather than theoretical considerations.)] was rendered ineffective** for a time because of the Great War.

However it was followed by other meetings in 1929, 1948 and 1960 which became known, all over the world, as the SOLAS Conventions.

By 1959 the supporting work for the SOLAS Conventions had become continuous and, in that year, the secretariat was placed in the hands of a specialized agency of the United Nations called the Inter-Governmental Maritime Consultative Organization, known as IMCO for short, with headquarters in London.

It will be seen that the keynote of the Canada Shipping Act is one of safety, founded on the best technical knowledge available. Although some of the early legislation was administrative, laws for the safety of rafts and vessels began to appear in the opening years of the nineteenth century. As the safety of shipping is the main task of the Marine Services of the Department today, it will be convenient to trace these developments through the history of vessel inspection and its influence on the Canada Shipping Act.

### CANADIAN AVIATION - 2017

June / July : TSB releases accident report into Halifax A-32X air accident.

## The Birth of “Air Regulation” ....

Well before the onset of aviation as we know it today, people with foresight realised that Air-Craft and people they carried could not be contained within “national” borders.

International flight - crossing sovereign domestic borders using heavier-than-air vehicles, balloons and dirigibles was soon to be a reality, and then it markedly increased.

1784: Paris police forbid balloon flights without a special permit, their decree is the earliest “documented” aviation legislation on record.

1880, the Institut de Droit International (Institute of International Law) includes aviation on the agenda of its Oxford, England convention.

1889 the 1st International Aeronautic Congress - Paris. creates a Permanent International Aeronautics Commission (PIAC).

1889 PIAC members : Brazil, France, Great Britain, Mexico, Russia and the United States

1899 - 1st International Peace Conference - The Hague, prohibits the discharge of projectiles and explosives from balloons or similar methods.

1900 - the 2nd International Aeronautic Congress - Paris

17 December 1903 the powered airplane adds a new dimension to transport

1905 - the Fédération aéronautique internationale (FAI) established by France as a non-governmental and non-profit organization to promote aeronautical and astronautical activities worldwide, particularly in the field of air sports, as well as to encourage relate skills, proficiencies and safety measures.

1906 - the 3rd International Aeronautic Congress - Milan

1907 - 2nd International Peace Conference - The Hague, prohibits the discharge of projectiles and explosives is not renewed.

## Notes on “Civil Aviation”

1907 - the 4th International Aeronautic Congress - Brussels

1908, 26 people (mostly German military officers) cross the Franco-German border by balloon and land in France.

1909 - the 5th International Aeronautic Congress - Nancy

1909 - The Comité juridique international de l'aviation, established in Paris, prepares a draft International Code of the Air through its national committees.

25 July 1909, Louis Blériot flies his Blériot XI crosses the Channel from France to England. He has no passport, and no authorisation to enter England.

18 May to 29 June, 1910 - 1st conference on an international air law code convened in Paris (International Air Navigation Conference, Conférence internationale de navigation aérienne) with the sole purpose of devising regulatory procedures relating to flights into and over foreign nations. This was the 1st diplomatic effort to formulate the principles of international law relating to Aerial (Air) Navigation. 19 European States (Austria-Hungary, Belgium, Bulgaria, Denmark, France, England, Germany, Italy, Luxembourg, Monaco, Netherlands, Portugal, Romania, Russia, Serbia, Spain, Sweden, Switzerland, and Turkey) attended this conference. Nations from other continents were not invited as the prospect of their aircraft operating in Europe was considered unrealistic. The 1910 Paris Conference dealt with 4 subjects:

- 1) National Laws;
- 2) Administrative and Technical Law;
- 3) Customs & Excise Law;
- 4) Regulation of Aerial Navigation

The Projet d'une convention internationale relative à la navigation aérienne 1910 draft comprised 7 Basic principles governing aviation within the following chapters:

- 1) Nationality of Aircraft and Registration Requirements;
- 2) Approval and Airworthiness Certificates;
- 3) Authorization for Air Traffic within the Borders and above a National Territory;
- 4) Regulations on Take-off, Landing and Flight;
- 5) Customs and Freight;
- 6) Public Aircraft;
- 7) Final Provisions,

55 articles and 3 Annexes:

- 1) marks of nationality and registration;
- 2) characteristics of the aircraft;
- 3) rules of the air traffic.

The Conference was divided between 2 concepts:

1. Freedom in the Air paralleling that of the Sea, and
2. National sovereignty extending into “International” air-space.

Most governments take action on the ratification of the convention, but equal treatment of “civilian” aircraft, whether national or foreign, within usable airspace met with failure. The cause of the failure was not the impossibility of reaching agreement as to the legal status of airspace; the cause was political and divided the conference between 2 concepts:

1. There should be “Freedom in the Air” paralleling that of “Freedom of the Sea”, and
2. that “National sovereignty” extended into “International” air-space.

1913, an International Committee of Aeronautic Law, Brussels, attempt to resume the work of the 1910 Paris conference also fails.

1916, Inter-Allied Aviation Committee established by France, Great-Britain, Italy and the USA to:

1. coordinate WW1 aircraft fabrication;
2. standardise aeroplanes, engines, appliances and other material.

29 April 1919: Using the basic precepts of the 1910 Paris Conference, Sir Winston Churchill issues the first Air Navigation Regulations for the United Kingdom and Commonwealth. The order covers Aircraft Design, Aircraft types, Aircraft Airworthiness, Aircraft Airworthiness inspection, Aircraft maintenance & maintenance personnel, aircraft.

13 October 1919: The Convention Relating to the Regulation of International (Cross-Border) Aerial Navigation

## Notes on “Civil Aviation”

(the “Paris Convention”) is ratified<sup>324</sup>.

This convention applies to the international cross-border operation of aircraft, the specific airworthiness of the individual aircraft applies to the states. Similar to the 1910 convention in content, substance. The precise wording of the articles and annexes stand out forcefully. Stresses the necessity of cooperation in post-war international aviation. The problems of international aviation were left to bilateral agreement. Rapid development of military (Service) aviation brings a decisive change in governmental attitudes towards Civilian (Civil) aircraft and air transport.

All neutral governments in WWI invited to adhere. Spain declined, partially due to Article 34 related to the uneven equivalency between parties.

1926, Spain withdraws from the League of Nations, its claim for a permanent seat on the Council rejected.

1926, the USA and most Central and South American States fail to adhere to the 1919 Paris Convention.

**25 to 30 October 1926, Ibero-American Conference on Air Navigation (Convenio Ibero Americano de Navegación Aérea, “CIANA”),** Madrid (Spanish attempt to assert authority in Latin America) Attended by 21 nations (Latin America, Caribbean Nations, Spain & Portugal). CIANA modelled after and worded virtually identical to the Paris Convention. CIANA assured:

- a) equal voting rights of its members (Article 34) and
- b) the right for a Contracting State to permit the flight above its territory of an aircraft that did not possess the nationality of a Contracting State (Article 5).

The Madrid Convention was never registered with any international body and was completely ignored in the Chicago Convention. Its lack of success was due to three factors:

1. Aircraft of the period were not sufficiently developed to tie together Iberia and Latin America;
2. Spain's political environment during the period was very unsettled, deteriorating into Civil War;
3. A few years after the Madrid Convention, Latin American energies focused on North America away from Iberia

1 November 1926 - Argentina, Costa Rica, Dominican Republic, El Salvador, Mexico, Spain and Paraguay ratify Havana Conference, but it does not come into force.

1944 the Convention on International Civil Aviation (the Chicago Convention)<sup>325</sup> Article 44(d) of the Chicago Convention of 1944 entrusts ICAO with the objective of fostering the planning and development of international air transport so as to meet the needs of the peoples of the world for safe, regular, efficient and economical air transport.<sup>326</sup> Article ?? deal with maintenance however Article ?? deals with airworthiness?

1995: World Trade Organisation (WTO) General Agreement on Trade in Services (GATS). GATS incorporated as one of the Annexes to the Agreement Establishing the World Trade Organisation (WTO).

The dual nature of air transport as a “public utility” and a “commercial activity” raises the question of whether market access in air transport should be brought under the purview of the WTO General Agreement on Trade in Services (GATS).

International “Air services” are governed by the GATS Annex on Air Transport Services.

The GATS Annex excludes from its scope the largest part of air transport services, namely traffic rights and services directly related to the exercise of traffic rights. The GATS Annex on Air Transport Services application is limited to three ancillary services: aircraft repair and maintenance, selling and marketing of air transport and computer reservation systems.<sup>327</sup> - LIBERALISATION OF INTERNATIONAL CIVIL AVIATION

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<sup>324</sup> Convention Relating to the Regulation of Aerial Navigation, opened for signature Oct. 13, 1919

<sup>325</sup> Antogni Lykotrafiti, Liberalisation of International Civil Aviation – Charting the Legal Flightpath - Discussion Paper No. 2015-18, September 2015

<sup>326</sup> “So long as safety oversight and designation remain with the country of airline establishment, or, in other words, so long as the country of designation maintains effective regulatory control over the designated airline, the industry's standards of safety can be preserved. Therefore, liberalisation by means of relaxing the nationality restrictions does not stand in the way of safety.” Antogni Lykotrafiti, Liberalisation of International Civil Aviation – Charting the Legal Flightpath Discussion Paper No. 2015-18, September 2015

<sup>327</sup> For an account of how air transport got into GATS in the first place, see Havel, B., 2009. Beyond Open Skies – A New Regime for International Aviation. Wolters Kluwer, The Netherlands. Chapter 6, p. 526, footnote 34 - Antogni Lykotrafiti, Liberalisation of International Civil Aviation – Charting the Legal Flightpath Discussion Paper No. 2015-18, September 2015 footnote #13

## Air Regulation in the United Kingdom (Imperial Britain)

### THE AERO CLUB OF THE UNITED KINGDOM 1909

<b>INFLUENCE OF THE AERO CLUB OF THE UNITED KINGDOM ON EARLY AERONAUTICS</b>
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- I. Issued Aeronauts' Certificates for lighter-than-air-craft from 1905 onwards;
- II. Established first UK Airfield 1909.
- III. Granted the Royal prefix on 15th February 1910
- IV. Established worlds' first "aircraft type" production line (Wright design, under license)
- V. Issued Aviators' Certificates for heavier-than-air-craft pilots from 1910<sup>328</sup>
  - a) The first 4 certificates were granted to established pilots before any test had been agreed upon.
  - b) Certificate numbers 5 thru 65 were granted on tests made under the rules of the Aero Club de France
  - c) 1910 : UK Aviators Certificate No. 1 thru 45
  - d) 1911 : UK Aviators Certificate No. 46 thru 168 = 123 Certificates
  - e) 1912 : UK Aviators Certificate No. 169 thru 382 = 214 Certificates
  - f) 1913 : UK Aviators Certificate No. 383 thru 719 = 337 Certificates
  - g) 1914 : UK Aviators Certificate No. 720 thru 1032 = 313 Certificates
  - h) 1915 : UK Aviators Certificate No. 1033 thru 2250 = 1,218 Certificates
  - i) 1916 : UK Aviators Certificate No. 2251 thru .....
  - j) Until 1915 members included most of the UK military pilots
  - k) Until 1915 trained most UK military pilots
- VI. Gifted initial training facilities and aircraft to the Royal Navy.
- VII. Granted the Royal prefix on 15th February 1910
- VIII. Represents the UK in Fédération Aéronautique Internationale and has a major role in setting technical standards and negotiating with international official bodies.
- IX. Responsible for control of UK:
  - a) private and sporting flying from 1909 until 1919 (?)
  - b) aviation records and competitions from 1909 until 1919 (?)
- X. Member Sir Sefton Brancker, Director of Civil Aviation of the day - helped form the Light Aeroplane "Club scheme"
- XI. Current Patron: HM the Queen
- XII. Current President, HRH Prince Andrew, Duke of York.

To the Members of the Aero Club of the United Kingdom,  
166 PICCADILLY  
LONDON, W.,  
January 6th, 1909

DEAR SIR, OR MADAM,

I am instructed by my Committee to inform you that from the commencement of the year 1909, an Official Organ of the Aero Club of the United Kingdom, entitled " FLIGHT," will be sent out weekly to all members of the Club free of charge. The attention of members is particularly directed to the column headed " Aero Club of the United Kingdom," wherein all notices and announcements affecting the Club will appear from time to time, instead of being communicated by circular as heretofore.

Yours faithfully,  
HAROLD E. PERRIN, Secretary

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<sup>328</sup> **Grace's Guide to British Industrial History** - the leading source of historical information on industry and manufacturing in Britain



<b>ROYAL AERO CLUB (R.AE.C) - AVIATOR'S CERTIFICATE RULES - 1ST MARCH 1910</b>
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The Royal Aero Club "R.Ae.C" of the United Kingdom will grant certificates in accordance with the rules of the Federation Aeronautique Internationale to aviators who have complied with the following rules:

- I. Three separate "trial" flights must be made:
  - a) each of 3 miles round a circular course without coming to the ground.
  - b) They need not necessarily be made on the same day.
  - c) On the completion of each flight the engine must be stopped in the air, and a landing effected within 150 yards of a given spot previously designated by the candidate to the Official Observers.
  - d) Each of the three trials must be vouched for by officials appointed by the Royal Aero Club, and a certificate obtained for each flight.
- II. All trials to be under the control of, and in places agreed to by, the Royal Aero Club.
- III. Before being allowed to compete for Pilot certificates, candidates must, if called upon, satisfy the Committee of the Royal Aero Club of their ability to fly 500 yards, and of making a gliding descent with the engine stopped.
- IV. All attempts must be made between sunrise and sunset, and suitable previous notice must be given to the Secretary of the Royal Aero Club.
- V. The Royal Aero Club declines all responsibility for any accidents, or any damage that may occur to the aviators, their machines, or to any third parties during or in connection with the qualifying tests of the candidate.
- VI. Candidates desirous of qualifying for certificates must make application on a form provided for that purpose.
- VII. Expenses incurred, if any, must be borne by the candidates.
- VIII. The Committee of the Royal Aero Club will decide if the candidate has qualified for a certificate, but reserves the right to refuse the same or withdraw the same at any time **without giving reasons**.
- IX. Foreigners belonging to a country represented on the Federation Aeronautique Internationale can only receive a certificate from the Royal Aero Club after having obtained the consent of their national sporting authority, as approved by the Federation Aeronautique Internationale.
- X. A certificate may be granted to a foreigner whose country is not represented on the Federation Aeronautique Internationale.
- XI. The decision of the Committee of the Royal Aero Club in all matters connected with the trials is final and without appeal.
- XII. The Committee of the Royal Aero Club may in special cases waive any or ail of the above rules, and grant certificates at its discretion.

Announced 24th September 1910

"Any aviator taking part in a public exhibition of flying without having obtained an aviator's certificate will render himself liable to have the granting of his certificate postponed for such period as the Committee of the Royal Aero Club may determine .

<b>ROYAL AERO CLUB "SPECIAL" CERTIFICATE.</b>
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Under the rules of the Federation Aeronautique Internationale, Published 11th November 1911

1. Candidates must hold the F.A.I. Aviators' Certificate, and be entered on the Competitors Register of the Royal Aero Club.
2. The Royal Aero Club of the United Kingdom will grant a "Special Certificate" to aviators who have passed the following tests. The requirements are:
  - A) A cross-country flight, out and back round a point situated at least 50 miles from the starting point -
  - B) The turning point will be selected by the Royal Aero Club, and will not be indicated to the candidate until one hour before the starting time selected by the candidate. This flight shall be completed within five hours of the selected starting time.
  - C) A separate altitude flight of at least 1,000 feet rise, which shall be verified by recording barograph, sealed by the observers prior to the start.
  - D) To glide from a height of at least 500 feet above the ground to earth, with engine completely cut off, and alight under normal conditions within 100 yards from the starting point. This glide may, at the candidate's option, be the conclusion of Test 2. A sealed barograph must be carried in all flights.
  - E) Each of the flights must be vouched for in writing by observers appointed by the Royal Aero Club. All tests to be under the control of, and in places agreed to by, the Royal Aero Club.
  - F) All flights must be made between sunrise and one hour after sunset, and suitable previous notice must be given to the Secretary of the Royal Aero Club.
  - G) Candidates must make application on a form provided for that purpose. Any expenses incurred must be borne by the candidates.
3. The Royal Aero Club will decide if the candidate has qualified for a certificate, but reserves the right to refuse the same or withdraw the same at any time without giving reasons.
4. The decision of the Royal Aero Club on all matters connected with the tests is final and without appeal.
5. The Royal Aero Club reserves itself the right to add to, amend or omit any of these rules, should it think fit.
6. The Royal Aero Club declines all responsibility for any accidents, or any damage that may occur to the aviators, their machines or to any third parties during or in connection with the qualifying tests of the candidate.

## "A Second Englishman Flies"

The first recognised powered and sustained flight in the United Kingdom occurred on 16 October 1908 at Farnborough by British Army Aeroplane No 1 (Cody 1) Biplane.

The 2nd was the flight of Mr. Moore Brabazon flying a Voisin.

### **"FLIGHT" THE OLDEST WEEKLY AVIATION JOURNAL IN THE WORLD**

FLIGHT was an outgrowth of Stanley Spooner's "AUTOMOTOR JOURNAL"

"AUTOMOTOR JOURNAL" evolved from Stanley Spooner's "The Automotor Journal and Horseless Vehicle".

February 1902 first documented account of aircraft and aeronautics by AUTOMOTOR JOURNAL

February 1902 AUTOMOTOR JOURNAL reprints a 4,000 word paper by Wilbur Wright on glider experiments.

January, 1906 AUTOMOTOR JOURNAL's formal recognition of powered flight

28 August 1908 SCIENTIFIC AMERICAN's formal recognition of powered flight.

November 5, 1908 AUTOMOTOR JOURNAL issues a section on aeronautics entitled, "Flight"

December, 1908, J.T.C. Moore-Brabazon, pioneer British aviator, writes a letter to Stanley Spooner stating that AUTOMOTOR JOURNAL should change its title "so as to show it recognises aviation, the "Conquest of the Air, and are able to prove it."

"My dear Stanley, How in the world you can think of wasting your time and your money on a flying paper beats me. Obviously flying can never amount to anything serious."<sup>329</sup> - Mr. Claude Johnson, managing director of Rolls-Royce, Ltd., circa 1908

02 January 1909 Stanley Spooner starts publishing FLIGHT as "A Journal devoted to the Interests, Practice; and Progress of Aerial Locomotion and Transport". FLIGHT is registered at the G.P.O as a "Newspaper" and the First Aero Weekly in the World. FLIGHT's Office: 44, ST. MARTIN'S LANE. LONDON, W.C.

Founder and Editor 1909-1934 : STANLEY SPOONER - aeronautical journalist (1855-1940).

02 January 1909 FLIGHT headlines with a picture of Mr. Moore Brabazon (the second Englishman to fly) flying his Voisin.

Spooner's editorial comment "as an offspring, FLIGHT are carrying on a tradition started by the AUTO MOTOR JOURNAL,

Anything which tends towards progress in aerial navigation . . . essentially comes within our immediate purview ." (first edition)

August 1912 A E (Algernon) Berriman, Technical Editor of the magazine *Flight*, *observer the first recovery from a fully-developed spin to be witnessed. Avro G biplane (no 7)*

FLIGHT has chronicled and indexed numerous events in British and international aeronautics:

- a) records,
- b) races,
- c) aero meets and displays,
- d) trade shows,
- e) new aircraft,
- f) technical developments;
- g) Photographs
- h) 3-view drawings, cut-away drawings & detailed views of cockpits and components
- i) Royal Aeronautical Society lectures;
- j) private flight

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<sup>329</sup> Flight- The Aircraft Engineer & Airships No. 1633 Vol XXXVII pg. 333 - 11 April, 1940

## Notes on “Civil Aviation”

- k) flying clubs ,
- l) airports ,
- m) military aviation
- n) commercial aviation
- o) Personalities and Key figures

1910 FLIGHT prints over 1,000 editorial pages

1919 FLIGHT prints 1,670 editorial pages.

6 and 13, March 1909 FLIGHT prints “The Human Side of Flying, an account of Messrs. Orville and Wilbur Wright”

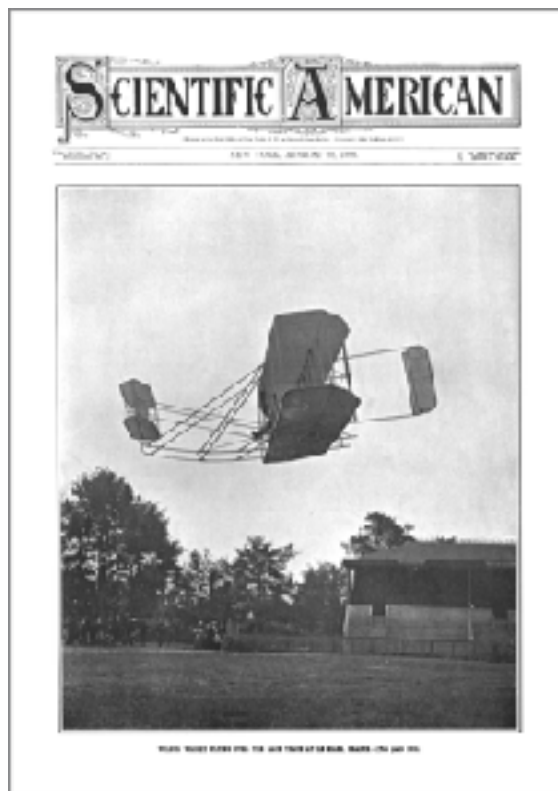
1913 - FLIGHT hires WW1 veteran John Yoxall as staff photographer. Yoxall pioneers air-to-air photography.

22 May 1919 FLIGHT prints Yoxall’s air-to-air shot of Mr. A.V. Roe looping an Avro 504 at Hunslow

15 December 1932 1st cut-away drawing. Max Millar’s drawing of a D.H. “Puss” Moth

1973 companion journal “The AEROPLANE MONTHLY” first edition. Provides in-depth articles on aviation history.<sup>330</sup>

Original copies of “FLIGHT” prior to the 1940’s are now valued at upwards of \$200/ copy -Ed



<sup>330</sup> United States EAA publication “The VINTAGE AIRPLANE” page 5, March 1985 Vol. 13, No.3

## Civil Flying in Imperial Britain: United Kingdom & Commonwealth 1919

- I. Post WW1, except for a brief period during Easter, "civil flying" did not officially "open" in the United Kindom until 01 May 1919.
- II. May to November 1919, made a convenient period on which to make a preliminary review of the work done by, and to estimate the future of, the Department of Civil Aviation.
- III. Between 12 February 1919 - on which date it was announced in the House of Commons that the Government had decided to set up a Department of Civil Aviation — and 01 May 1919 (the official date of the opening of civil flying in the United Kingdom) a small staff began to attack the multiplicity of problems and difficulties attending the transition period from War to peace, which had to be met in the commencement of civil aviation.
- IV. There were the adjustment and redistribution of activities between the service and civil sides:
  - A. The framing, with the assistance of representatives from the industry and other experts, of the Air Navigation Regulations for the control of civil flying at home, as distinct from the International Air Convention, governing the regulations for international (between -borders *Ed.*) flying ;
  - B. The necessity for deciding upon which routes traffic was most likely to follow and develop, and
  - C. The aerodromes which should therefore, be retained in the general after-War liquidation.
- V. There were also a number of other problems of a kindred nature to assist in the solution of which there were no landmarks, no established precedents and no accumulated experience".<sup>331</sup>

<b>REASON FOR THE AIR MINISTRY</b>
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"The Air Ministry exists to [among other duties] administer the laws and regulations under which aerial navigation is carried on," <sup>332</sup>

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<sup>331</sup> Flight - Nov 9th, 1919 page 1506

<sup>332</sup> Flight- The Aircraft Engineer & Airships No. 611 (No. 37, Vol XII) pg. 970, Sept 09, 1920

## The Imperial British Air Ministry and Regulation of the Air : 1919

### AIR NAVIGATION REGULATIONS

- I. The Air Navigation Regulations which came into force on May 1, 1919, were based on War experience and on an estimate of the requirements of civil aviation.
- II. In a few directions, *experience has shown that there are omissions*, while in others *the Regulations have been found to be somewhat in advance of requirements* [...]
- III. It has not always been easy to administer the Regulations so as to secure the safety of the public without handicapping the expansion of air work, but frequent consultations between the Department and representatives of the industry and the goodwill of all concerned have enabled a very fair measure of success to be obtained in this respect.
- IV. Any defects in the Regulations or in the method of administering them brought to light by experience are corrected as rapidly as possible.

### ACCIDENTS

- I. Stress has been laid on the necessity for the punctual report and investigation of accidents, as only by this means can the weak points in administration, personnel and material be eliminated and the safety of the public proportionately increased.
- II. The organisation for this work built up during the War by the R.A.F. has been absorbed by the Civil Aviation Department.
- III. On receipt of the report of an accident involving a fatality, or injury to personnel, or serious damage to a machine, experts are immediately sent to investigate matters on the spot.
- IV. This work has fortunately been exceedingly light and the facilities afforded by the firms concerned have enabled the necessary investigations to be carried out satisfactorily

### AERODROMES AND LICENSING

- I. In the same way as ships require harbours, so aeroplanes and seaplanes require aerodromes, which have to be built, inspected and licensed.
- II. Licences also are necessary for the pilots competent to control the machines, and for the officials at the aerodromes qualified to pass machines as fit for flying, while every civil machine has to be registered and numbered in the same way as a motor car, and, if flying for hire, must in addition be certified as "airworthy."
- III. A special branch of the Department of Civil Aviation deals with this and kindred questions, and Between May 1 and October 31 (the UK Department of Civil Aviation) granted the following licences and certificates :
  1. Licences for pilots : 374
  2. Licences for *ground engineers* : 258
  3. Licences for *engineers* : 1
  4. Licences for navigators : 2
  5. Licences of aerodromes : 92
  6. Certificates of registration : 303
  7. Certificates of airworthiness : 241

NOTE: The reason that there has as yet been little or no demand for "engineers" or "navigators" licences is that conditions which would necessitate the inclusion of these classes in the crew of an aircraft are not yet common.

### COLLATION OF INFORMATION

## Notes on "Civil Aviation"

- I. Technical information is collected and collated by the Information Branch from the various foreign journals with a view to assisting the constructive side of the industry, civil and service.
- II. From time to time, as thought necessary, technical memoranda on different subjects are issued.
- III. The Research Branch of the Air Ministry is kept supplied with information, as also is the business community interested in civil aviation.
- IV. In regard to foreign markets, close co-operation has been established with the activities of the Department of Overseas Trade and the various naval and military attaches.
- V. By these means British firms are supplied with information in the form of periodical summaries on such matters as foreign aviation, amalgamation of foreign aircraft firms, regulations and by-laws affecting civil aviation in foreign countries.
- VI. During the past two months 45 special notices have been sent out through the Society of British Aircraft Constructors, and numerous requests from British firms for information on urgent questions have been received and answered.
- VII. This Branch is also responsible for the issue of official Press communiques on all questions affecting civil aviation.

<b>AIR MINISTRY STAFF</b>
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- I. The staff of the Department of Civil Aviation on October 31 1919 consisted of a total of 143, of which 52 are administrative officials and 91 clerical subordinates, at a total salary of £50,000 per annum.
- II. These figures include the Air Ministry Meteorological staff, but not the personnel of the Meteorological Office recently transferred to the Air Ministry.
- III. It should be borne in mind that the staff of :
  - A. the Communication branch,
  - B. the Accidents branch, and
  - C. the Meteorological branchare engaged on technical work for both the civil and service sides.
- IV. The selection of a staff to deal with the many questions involved has not been an easy task owing to the fact that the Department must, in the nature of things, be a civil one, and that those *officers possessing the requisite administrative and technical experience* can usually be found only among those who have served in or with the Royal Air Force.
- V. It has been impossible, until conditions are more certain, to offer fixity of tenure in the Department of Civil Aviation, and the terms of appointment have been necessarily brought into unfavourable comparison with the improved rates of pay recently conceded to the Royal Air Force. The result has been that recruitment has been difficult and slow. Steps are being taken to remedy this.
- VI. It has been the object of the Department to ensure the safety both of the flying and non-flying public, without imposing irksome restrictions on the various firms concerned.
- VII. In numerous problems on which technical advice has been required, the Department of Civil Aviation has received the assistance of the directorates of research and aeronautical inspection of the Department of the Director-General of Supply and Research, which is a separate Department in the Air Ministry from that of civil aviation.
- VIII. Hitherto, *all machines employed by civil aerial transport firms have been converted war machines*, and although numerous new types are on the stocks, *it may be said that no true commercial machine has yet appeared.*
- IX. *Divergencies in type and construction between service and civil aircraft will, however, rapidly appear"* <sup>333</sup>

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<sup>333</sup> F. H. SYKES, Controller-General of Civil Aviation, November 1, 1919, Air Ministry. published in Flight 20 November 1919, pg 1508

## Imperial British Air Ministry : announcements : 1919

### APPLICATION OF THE REGULATIONS - NATIONAL CONTROL OF AVIATION

- I. The official Air Navigation Regulations apply to the United Kingdom (Does the United Kingdom include the Commonwealth Nations? and if not, does pre-existing "Imperial British Law" apply to those commonwealth nations who are excluded ?) only.
- II. They do not permit of civil aircraft flying from England across the Channel to any foreign country, and are not applicable elsewhere than in the United Kingdom. [see note questions above]
- III. Overseas civil flying [Meaning international x-border between nations] will not be possible until the International Regulations for the Control of Aviation are published.<sup>334</sup>

### INSPECTION OF AIRCRAFT AT AERODROMES

- I. It will be noted that a necessary part of the aerodromes management is the provision of licensed ground engineers.
- II. As there has not yet been time for firms to provide these, the A.I.D. has been called upon, as a temporary measure, to provide a certain number of skilled personnel to assist.
- III. It must be remembered also, that it is only from aerodromes where licensed ground engineers are located that aeroplanes can start.

### AIRCRAFT MILITARY MARKINGS

- I. The bulk of machines which will at first take part in civil flying, having been built as Service (R.A.F & R.N.A.S) machines, are marked with red, white and blue rings, and bear Government [registration] numbers.
- II. The existing Government numbers will be allotted to these machines as temporary registration marks.
- III. When permanent marks are allotted the old registration numbers must be erased and the new permanent marks put on within 14 days of allotment.
- IV. Owners of aircraft upon which the service ring markings are painted must obliterate them.

### AIR MINISTRY LICENSES

All applications for licenses of every class, aerodromes, air-worthiness of machines, pilots, ground engineers, etc., should be addressed to the Air Ministry (Controller General, Civil Aviation "C.G.C.A")

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<sup>334</sup> Flight 08 May, 1919



## Imperial British Air Navigation : Regulations

### THE FRAMING OF THE AIR NAVIGATION REGULATIONS

"the framing of *the Air Navigation Regulations* which came into force on 30 April 1919, and especially that part of the regulations dealing with ground engineers [...] necessitate the creation of "a new class of official" [...] wherein the inspection of aircraft must necessarily differ from that of other vehicles of locomotion"<sup>335</sup>

### THE DUTIES OF A GROUND ENGINEER

- 1) A ground engineer is **responsible for maintaining the validity of the certificate of airworthiness**, and to do so is required to certify each day on which a flight is made that the aircraft is safe in every way for flight.
- 2) The **experience** during the past two years **has been that** in some cases **there has been a tendency to consider such certificates as merely a piece of formality which must be fulfilled**.
- 3) Sometimes the ground engineer hands over the machine to the pilot, and takes but little, if any, interest in what happens on its journey, although **the pilot generally bases his certificate as to fitness for each flight on the ground engineer's daily certificate, and may also rely on the ground engineer to see that the petrol, oil and water in the tanks are sufficient for the proposed journey**. (Ed. note: **Nothing in this meant that the G/E was the person responsible for petrol, oil and water provisioning, but that they could assist the pilot**)
- 4) **The ground engineer is responsible for the air-worthiness of the machine until the very moment when it takes the air**, and the last few minutes on the ground and the first few in the air often provide evidence which should be carefully noted.
- 5) **Aircraft require continuous maintenance, and the ground engineer is responsible that the machine to which the original certificate of airworthiness was granted is unaltered by such maintenance**.
- 6) The ground engineer must also consider the conditions under which the machine is stored ; how these are likely to affect the various parts of which the machine is composed.
- 7) The ground engineer must **decide when it is necessary to fit a spare part**, whether this be a nut or a complete component. The mere fitting of the new part is but the smallest part of this duty.
- 8) The ground engineer **must satisfy himself that**:
  - a. The part has been correctly made in accordance with the drawings on which the certificate of airworthiness was granted;
  - b. The part is of the material specified in these drawings.
  - c. The part must have been inspected during construction (as laid down in detail in paragraph 21 of Section 3 of the 'Directions');
  - d. There is actual evidence that it has passed such inspection;
  - e. The part has not been damaged or deteriorated since such inspection was carried out.
- 9) The Certificate concerning the fitness of the engines is probably one of the most difficult duties of a Ground Engineer. Obviously the airworthiness of the aircraft depends very largely upon the engines.
  - 1) **Records taken** over a considerable period show that for every eight forced landings due to engine failure, one is actually due to defect in the engine itself, the remainder being directly caused by some default in the installation of the engine.
  - 2) So long as **the engine and the aircraft structure are designed as separate units, installation must remain a weak point of the whole machine**, so that the ground engineer must give his constant attention to the daily routine of cleaning petrol filters, checking petrol flows and water connections, etc., ensuring that all ignition leads, switches and contacts are in good order.
  - 3) He should **verify** each day that the engine runs up to its proper speed, see that the oil pressure builds up and is properly maintained, and that the radiator temperature is normal.
- 10) The ground engineer **should also make a point of inquiring of the pilot** as to any sign of excessive engine vibration in the air, the flexibility of the engine and any unusual circumstances which may have characterised its running during the daily trips.
- 11) The **repairing** of an engine **requires** on the part of the ground engineer in charge of it **almost a wider and more detailed knowledge than is needed in the building-up of a new engine**, in that **he must determine**:
  - 1) **the safe limits** to which crankshafts, cylinders and the like may be re-ground, and
  - 2) **the extent to which partially worn** components may be retained.

<sup>335</sup>Extracts from a paper by Lieut.-Col. H. W. S. OUTRAM before the R.Ae.S. on 3 February 1920. Flight, 1920

## Notes on "Civil Aviation"

- 12) A **sound knowledge of materials and their** heat treatment (**manufacturing processes**) , too, **is essential to justify his responsibility** in the acceptance of new parts. This all-round knowledge is not easily obtainable under normal conditions of works organisation and employment.
- 13) One result of both Service and Civil experience is that **various small points come into prominence which it is desirable to draw to the notice of all ground engineers**. "Notices to Ground Engineers" are therefore issued.
- 1) "Notices to Ground Engineers" are published in the technical press (FLIGHT, The Aeroplane, etc.,) and are sent to all registered owners of aircraft, who are expected to pass them on to their ground engineers.
  - 2) It is here urged that ground engineers and aircraft operators generally should suggest matter for such Notices.
  - 3) Experience with any particular type of aircraft or engine usually brings to light the little troubles to which it is particularly prone. Such experience gained by the larger companies operating a number of machines would be of value to the owner or operator of a single machine of the same type, and in many cases to owners of machines of similar types, and could often be published as ' Notices to Ground Engineers ' with advantage.
  - 4) Occasionally particular points of weakness only become apparent after more or less prolonged use or as the result of an accident. **When such cases come to light the certificates of airworthiness for all machines of the type in question are suspended until such time as the defect has been remedied.** Information of such suspensions is issued as a "Notice to Ground Engineers".
  - 5) Once the ground engineer's attention has been drawn to a point of weakness it is sometimes possible to permit the aircraft to fly until temporary or permanent replacement has been made without taking the machine out of service.
- 14) **The insurance of aircraft** is already of such importance as to call for a separate paper, and on this occasion it is only proposed to touch on one aspect, that of the relation of the ground engineer to the insuring company. **So far as the Air Navigation Regulations are concerned, the ground engineer is only required to certify that the aircraft is in every way safe for flight.**
- 15) The **risk of insuring** any aircraft is governed to a large extent by the following points, all of which have to be taken into consideration :
- (a) The design and primary standard of construction of the aircraft.
  - (b) the "Condition of the Aircraft" when setting out for the flight.
  - (c) Pilot Skill
  - (d) Meteorological Conditions..
- Of these factors the second is that which concerns the ground engineer. It may often, therefore, be his duty not only to maintain that minimum standard insisted upon by [...]
- 16) It is suggested that it may be found necessary to consider the formation of a senior grade of Ground Engineer.
- 17) It is already probable that a large operating company would find it find it desirable to place their ground engineers under the control of one man **who had higher technical qualifications and ability than are required for the ordinary ground engineer**. Such a man would go far towards ensuring the reliability of any service and would **advance the status of 'ground engineering ' nearer to that which must be attained if these men are to safeguard adequately the aerial transport of the future.**"
- 18) In two appendices Lieut.-Col. Outram gave:
- 1) a list of " Notices to Ground Engineers" published by the Air Ministry, and
  - 2) the results of Air Ministry examinations of ground engineers up to December 31, 1920, which showed that out a total of 664 applicants, 155 did not pass, 509 were "**passed and licensed**" and 132, were "**operating and under supervision**" during 1920

### EXAMINATION OF GROUND ENGINEERS FOR LICENSING

- I. The procedure of examination of candidates for Ground Engineer Licenses:
- A. by a Board composed of Air Ministry inspectors;
  - B. such examination can only guarantee to weed out those who are insufficiently qualified;
  - C. The Board can do no more than state that *in their opinion* a candidate is **reasonably likely to be** an efficient ground engineer;
  - D. the only way to determine definitely whether a man is a properly qualified ground engineer is to watch him at his work, and in particular to note the results of such work.

## Notes on "Civil Aviation"

- II. It is seldom that any one man is called upon to cover the whole range of a ground engineer's duties [...] the following subdivision of [Ground Engineers'] licences into four [alphabetised] categories :
- A. Rigging and daily maintenance of aircraft at the aerodrome;
  - B. Overhaul and construction of aircraft;
  - C. Top overhaul and daily maintenance of the engine at the aerodrome;
  - D. Overhaul and construction of aero engines.
- III. The majority of Ground Engineer candidates may be divided into two classes:
- 1) One class consists of men:
    1. who have a sound knowledge of aerodrome practice;
    2. who have a fair knowledge of ordinary workshop methods;
    3. who have a surprising ignorance of the qualities of the materials from which an aircraft or aero engine is built;
    4. who have even less knowledge of the many ways in which such materials may be spoilt by bad treatment and
    5. who are ignorant of the materials' peculiar properties.
  - 2) The other class consists of men:
    1. whose experience has been limited to a large extent to the construction of aircraft or aero engines;
    2. who have gained the knowledge of materials referred to;
    3. who are expert in modern aeronautical workshop practice;
    4. who have only a very general or theoretical idea of what happens when the aircraft takes the air.
- Each of these classes is again sub-divided into:
- A. the metal-worker;
  - B. the wood-worker.
- IV. Generally a candidate with good and sound knowledge of metal work has but an elementary knowledge of wood and non-metallic materials, or his knowledge of the latter pre-dominates.
- V. Only a few men have shown equally sound knowledge of both branches of aircraft construction.
- VI. It has been found that in the majority of cases a candidate can be placed in one of these classes within the first few minutes. The remainder of his examination is spent in ascertaining whether his experience and knowledge in the other divisions are sufficient to warrant a recommendation.
- VII. The examination of a ground engineer is only completed when his work has been watched



**SUPERVISION OF GROUND ENGINEERS DURING WORK**

- I. The examination of a ground engineer is only completed when his work has been watched. In order, therefore, to supervise the work of the ground engineer, the power of re-inspection provided in paragraph 6 of Schedule 3 of the Regulations and paragraph 8 of Part IV of the 'Directions' is exercised. [is this what the military officers in the fledgling CAF used to assert their "dominance over the Ground Engineer?"]
- II. It was decided to arrange for periodical re-inspection of all aircraft in use, and thereby supervise the work of the active ground engineers.
- III. The method adopted for periodical re-inspection of all aircraft in use is as follows :
  - a) All certified aircraft must fly from licensed aerodromes.
  - b) The Air Ministry have a complete list of such aerodromes, which is kept up to date.
  - c) Each is visited in turn, and the aircraft examined, the work done by the ground engineers responsible for the daily certificates for such aircraft being checked and noted.
  - d) It has been found that this method gives a useful record of nearly every ground engineer who is operating. Should any escape such supervision, the fact becomes apparent when they apply for renewal of their licence, and in such cases particulars of the work done are required.
- IV. The first two years' supervision has shown that aircraft operators may be divided into two classes :
  1. Those whose chief aim is to run a regular and reliable service:
    - a) who have a number of machines in operation;
    - b) employ an organised staff of ground engineers.
  2. The owner-operator or small syndicate with one or two machines whose main object is to obtain the biggest return for their outlay by "joy-flying" exhibition flights and the like, at sea-coast resorts or inland holiday centres.

It is appreciated that at this stage the latter class of operator is important from the point of view of the public education in flight. It is, however, this latter class of operator that requires the more careful supervision, and it is claimed that the small number of accidents which have occurred have proved that adequate and efficient supervision is possible without undue expense to the State or such a degree of State control as to seriously hamper the operator.

## SUPPLEMENTARY AIR REGULATIONS 1919<sup>336</sup>

**LICENSING OF PERSONNEL**

- I. With reference to Regulation j (3) and Schedule II, applications for licences should be made to the Secretary, Air Ministry, London, W.C. 2. (II)
- II. Technical Examination:
  - A. Rules as to lights and signals, and rules of the air.
  - B. After satisfactory practical tests have been passed, candidates will submit themselves when summoned to examination on :
    1. Flying machines;
      - a) Aeroplanes:
        - (1) Theoretical abstract knowledge of the resistance of the air in connection with planes, rudders, elevators and propellers;
        - (2) functions of the different parts of the machine and of their controls.
        - (3) Assembling of aeroplanes, propellers, undercarriages, rudders, elevators and their controls.
        - (4) Practical tests on rigging and
      - b) Seaplanes:

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<sup>336</sup> Flight May 1919

## Notes on "Civil Aviation"

- (1) Theoretical abstract knowledge of the resistance of the air in connection with planes, rudders, elevators and propellers ;
- (2) functions of the different parts of the machine and of their controls.
- (3) Assembling of aeroplanes, propellers, undercarriages, rudders, elevators and their controls.
- (4) Practical tests on rigging.

### 2. Engines;

- a) General knowledge of internal combustion engines, and their various functions; valve gear, carburation, ignition, exhaust.
- b) Characteristics of aero engines and a general idea of their construction, adjustment and assembling.
- c) Causes of the faulty running of engines.
- d) Fuel and oils.
- e) Description of the details of the aero engines used.
- f) Adjustments, lubrication, upkeep disassembling and assembling of the principal parts ;
- g) Causes of breakdown.
- h) Use of throttle and other controls.
- i) Practical tests in running repairs.

### 3. Navigation.

<b>GENERAL KNOWLEDGE</b>
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- I. International rules for aerial and maritime navigation.
- II. Practical knowledge of international aerial legislation.

<b>CERTIFICATES OF AIRWORTHINESS</b>
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## Notes on "Civil Aviation"

- I. With reference to Regulation 2 (1) and Schedule III, applications for certificates of airworthiness should be made to the Secretary, Air Ministry London, W.C. 2.
- II. Application forms will be supplied on demand.

<b>"TYPE" AIRCRAFT</b>
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- I. Subsequent to the forwarding to the Secretary Air Ministry of an application form duly completed for a certificate of airworthiness for a type aircraft, the applicant shall forward to the Director of Research, Air Ministry:
  - a) general arrangement drawings of the proposed aircraft; together with
  - b) such particulars of load, fuel, engines, etc.,as will enable a preliminary opinion to be formed as to general safety.
- II. The applicant shall forward subsequently such drawings and particulars of the proposed aircraft as may be necessary for the checking in detail of the safety of the aircraft
- III. The information and drawings required for this purpose should be, where applicable, in accordance with forms to be supplied on application. (CO. Forms 12 and 13.)
- IV. Blue prints or rough sketches may be sufficient to enable the said checking to proceed provided they are fully dimensioned.
- V. The applicant may proceed with the construction of any part or parts of the aircraft as and when these are approved by the Secretary of State.
- VI. The workmanship and materials of construction of the aircraft shall be approved by the Secretary of State in accordance with detailed directions in para. 20 below.
- VII. On completion of the aircraft, flying trials will be carried out by the applicant's or constructor's pilot in the presence of representatives of the Secretary of State.
- VIII. The applicant will be instructed to deliver the aircraft to the official aerodrome for official trials after the satisfactory completion of:
  - 1. the check calculations,
  - 2. inspection, and
  - 3. applicant's flying trials, and
  - 4. after any modifications considered necessary for safety have been completed to the satisfaction of the Secretary of State.
- IX. At any time prior to the delivery of the aircraft for official trials, modifications to the aircraft may be made by the applicant, provided that:
  - 1. full particulars of the proposed modifications are first submitted to the Director of Research, Air Ministry;
  - 2. drawings of the proposed modifications are first submitted to the Director of Research, Air Ministry of the proposed modifications are first submitted to the Director of Research, Air Ministry, and
  - 3. such as affect the safety of the aircraft are approved by the Secretary of State,
- X. During official trials (which may be attended by a limited number of representatives of the applicant):
  - 1. the aircraft will be in the charge of the representatives of the Secretary of State, but
  - 2. the Secretary of State and /or his representatives shall not be liable for any loss or damage caused to such aircraft during official trials.
  - 3. If any modifications are considered by the Secretary of State to be necessary for safety as a result of such official trials, such modifications shall be carried out by the applicant, and on completion thereof the aircraft shall be delivered, if required, for further official trials.
- XI. On the completion of official trials:
  - 1. The applicant will be notified, and
  - 2. Reports on calculations and tests will be supplied to him by the Secretary of State on application
  - 3. The aircraft will be handed over to the applicant at the official aerodrome for removal, or

## Notes on "Civil Aviation"

4. The aircraft will be delivered by an official pilot to an aerodrome selected by the applicant, and approved by the Secretary of State.
- XII. Prior to the issue of a certificate of airworthiness, the applicant shall deliver to the Director of Research, Air Ministry, a complete set of working drawings (process tracings) of the aircraft.
- XIII. Only upon the satisfactory completion of the official trials, and after the completion to the satisfaction of the Secretary of State of any modifications considered necessary for safety, will a certificate of airworthiness be issued.

### **"SUBSEQUENT TYPE" AIRCRAFT**

Following the receipt by the Secretary, Air Ministry, of an application form, duly completed, certificates of airworthiness for *subsequent aircraft which conform in all essential respects* with a "**type aircraft**" *for which a certificate of airworthiness has previously been issued*, will be granted, subject to the following conditions and procedure.

- I. The applicant may:
  1. make modifications (including change of engine type) to the aircraft and
  2. may depart from the approved complete set of working drawings (process tracings) of the type aircraft that are in the possession of the Secretary of State ;
  3. but full particulars and drawings of the proposed modifications shall first be delivered to the Director of Research, Air Ministry, and such as affect the safety of the aircraft shall be approved by the Secretary of State.
- II. During the construction of the aircraft the inspection of the workmanship, construction and materials shall be as approved by the Secretary of State in accordance with detailed directions in para. 21 below.
- III. In the case of an aircraft, which in the opinion of the Secretary of State:
  - A. differs considerably from the "type aircraft",
    1. on completion of the aircraft, the Secretary of State may require flying trials to be carried out, by the applicant's or constructor's pilot, in the presence of his representatives,
    2. and/or may require the aircraft to be delivered to the official aerodrome for additional trials.
    3. The procedure in this case will be in accordance with the procedure governing similar trials in the case of a type aircraft, as laid down in paras. 10, n and 12 hereof.
  - B. in the case of an aircraft built by a constructor not familiar with the type aircraft:
    1. on completion of the aircraft, the Secretary of State may require flying trials to be carried out, by the applicant's or constructor's pilot, in the presence of his representatives,
    2. and/or may require the aircraft to be delivered to the official aerodrome for additional trials.
    3. The procedure in this case will be in accordance with the procedure governing similar trials in the case of a type aircraft, as laid down in paras. 10, n and 12 hereof.
- IV. On the satisfactory completion:
  1. Of the aircraft; and
  2. Of any trials that may be required by the Secretary of State; and
  3. When any modifications considered necessary for safety have been completed to the satisfaction of the Secretary of State,A certificate of airworthiness will be issued.
- V. Prior to the issue of such certificate, the applicant shall deliver to the Director of Research, Air Ministry, a complete set of working drawings (process tracings) of any modifications to or departure from the type aircraft.
- VI. In the foregoing; directions the term " aircraft " includes the aircraft and all equipment (unless the context otherwise implies), except that working drawings will not be required for engines or equipment of approved types.

### **APPROVAL OF WORKMANSHIP AND MATERIALS**

Type Aircraft.

## Notes on "Civil Aviation"

- I. **Inspection of type aircraft will be carried out by representatives of the Secretary of State.**
- II. The Director of Aircraft Inspection will accept, wherever in his opinion possible:
  1. the **inspection of details**,
  2. the **inspection of components** and /or
  3. the **inspection of materials** for type air-craftmade by employees of the constructor under the supervision of his representative, but each component will be finally inspected and approved by a representative of the Director of Inspection, who will co-operate with the constructor's inspecting staff.
- III. Constructors must notify Director of Aircraft Inspection seven days before commencing work on any part of the aircraft, the inspection of which is necessary prior to further Work.
- IV. The constructor **must also fulfil the conditions detailed hereunder for subsequent aircraft.**

<b>CERTIFICATION OF AIRCRAFT OF THE "SAME TYPE"</b>
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- I. Constructors must satisfy the Secretary of State that their inspecting staff is such as to **ensure that aircraft passed by them conform in all essential respects to the type design.**
- II. Constructors must purchase **material to the specifications approved for the type design**, and must arrange that each and every batch of such **material is proved to comply with such specifications by suitable examination, sampling and testing**, as may be approved by the Director of Aircraft Inspection.
- III. Constructors must make such arrangements at their works as will **preclude the use of material other than that approved** as in para, (II) above.
- IV. Constructors' inspecting staff members must stamp or otherwise **provide means for the identification of each and every detail, in such a way that the individual responsible for such approval can subsequently be traced**, selective inspection being adopted where considered possible.
- V. Constructors must **issue only approved details (Drawings and data) or parts** to the shops for assembly into components.
- VI. Constructors must maintain an efficient process **inspection during such work of assembly, (Staged Inspection process)** and record such inspection on a process card for each component.
- VII. Every component must be **finally inspected by a qualified member of their inspecting staff**, who will stamp the component in such a way that he may afterwards be identified, and will also sign the process card.
- VIII. Constructor's **methods of carrying out the following operations must be approved** by the Director of Aircraft Inspection, or other recognised authority, viz. : **Heat-treatment of steel, seasoning and conversion of timber, glueing of important parts, and doping.**
- IX. Constructors must **ensure that all instruments and other parts affecting airworthiness purchased from sub-contractors have been inspected and approved in accordance with these conditions.**
- X. Aircraft and/or engine constructors **must ensure that all aircraft and/or engines** have:
  1. been **inspected in accordance with these conditions** and
  2. been **approved in accordance with these conditions**, and further,
  3. satisfactorily **undergone** such bench tests as are required by the Secretary of State, and for this purpose that suitable test stands and accessories are provided to the satisfaction of the Director of Aircraft Inspection.
- XI. Aircraft constructors must carry out an efficient **inspection of**:
  1. the **installation** of all engines;
  2. the **installation** of all instruments;
  3. the **installation** of all parts ,



## Notes on "Civil Aviation"

that are **fitted** by them **into the aircraft**, such inspection to **ensure** that **they function correctly**, the individual responsible being indicated by a signature on the process card referred to.

XII. Constructors must limit the power of their inspection staff to grant concessions to matters which:

1. do not affect the weight of the part;
2. do not affect the strength of the part;
3. do not affect the functioning of the part -

Should any of these points be affected, the matter must be referred to the designer of the aircraft, and if affecting the type design, to the Director of Research as laid down for modifications to type designs.

## Imperial British Board of Trade : Licensing of Competent Persons

"as the Board of Trade protects the public by inspecting ships and railways, so it should intervene in the public interest to inspect aircraft, test materials, and examine designs"<sup>337</sup>

The Safety Certificate which is required for ships by Article 57 of the Convention on Safety of Life at Sea can be issued after an inspection either made by officers of the State to which the ship belongs or by surveyors nominated by the government for this purpose or organisations recognised by it.

"In every case the Government concerned fully guarantees the completeness and efficiency of the inspection and survey." (Article 57.) J. M. Spaight, *Aircraft in Peace and the Law*. page

M. Lochet's concluded that:

1. "the best guarantee of airworthiness was the pilot's own interest in preserving his life", but
2. To rely upon the caution and judgment of a young airman, perhaps of an abnormally optimistic temperament, in such a matter could not be justified where passenger carrying aircraft are in question<sup>338</sup>

The Interpretation Act, 1889, applies for the purpose of the interpretation of these regulations as it applies for the purpose of the interpretation of an Act of Parliament, and as if these regulations were an Act of Parliament.

The definition of Personnel in 1919 meant, in relation to any aircraft and included "any pilot, commander, navigator, and engineer (not specific to one type or another), and any operative member of the crew"

I. With respect to "Competent Persons" to undertake:

- A. "Periodic Inspection"
- B. "Overhaul"
- C. Examination before each Flight of Aircraft

### GROUND ENGINEERS

I. With reference to Air Navigation Regulation No. 2 (1) and Schedule III (3 and 5 thru 10), the following is the procedure for any person desirous of being licensed as a competent person, hereinafter referred to as a "ground engineer", to:

1. undertake the inspection of periodic overhauls of aircraft required to be certified as air-worthy, or
2. as a competent person to examine such aircraft before each flight.

<sup>337</sup> Sir Fortescue Flannery, House of Commons debate, February, 1919

<sup>338</sup> James Molony Spaight, *Aircraft in Peace and the Law*. page 39



**APPLICATIONS FOR ENGINEER LICENCES**

- I. Applications for licences should be made to the Secretary, Air Ministry London, W.C. 2
- II. Application forms will be supplied on demand.
- III. Subsequent to the forwarding to the Secretary, Air Ministry, of an application form for a ground engineer's licence, the candidate will be requested to report to a local representative of the Director of Aircraft Inspection for examination. At this examination the candidate will be required to submit proof :
  1. That he is not less than 21 years of age.
  2. That he has served:
    - a) at least two years as a mechanic or engineer on internal combustion engines, or
    - b) a like period on aircraft construction or maintenance, or
    - c) a period of not under three years on joint aero, engine and aircraft construction or maintenance.
- IV. From 1919 Ground Engineer licenses are of two functions
  - 1) to perform maintenance on aircraft and / or engines and
  - 2) to perform inspection / certification of aircraft and / or engines, andwere issued for either one purpose or a combination of purposes:

A candidate *may apply to be licensed as a ground engineer* to:

  1. **inspect** all flying machines *each day before flight*
  2. **inspect** all engines *each day before flight*
  3. **inspect** all flying machines and engines *each day before flight*
  4. **inspect** all flying machines *after overhaul*
  5. **inspect** all or engines *after overhaul*
  6. **inspect** all flying machines and engines *after overhaul*
  7. **overhaul** all flying machines
  8. **overhaul** all engines;
  9. **overhaul** all flying machines and all engines
  10. A candidate may apply for a licence limited to the inspection of any named type or types of flying machine or engine either after overhaul and /or each day before flight.
- V. From 1919 Ground Engineer licenses were issued with "Type Ratings" for inspection and certification of aircraft and / or engines.:

A candidate may apply *for a licence limited to the inspection* of:

  1. any **named type or types** of flying machine after overhaul;
  2. any named type or types of flying machine each day before flight;
  3. any named type or types of flying machine after overhaul and each day before flight;
  4. any named type or types of engine after overhaul;
  5. any named type or types of engine each day before flight;
  6. any named type or types of engine after overhaul and /or each day before flight
- VI. From 1919 candidates who applied *to be licensed as a ground engineer* in the United Kingdom could be examined on 3 areas. This examination took place post apprenticeship and after their training / education. (NOTE: The United States adopted and follows this system to this day, but uses different terms to differentiate *the person performing maintenance* - "A&P" - from *the person holding inspection and certification authorisation* - "A&P with I.A". To correctly recognise the UK originated term "AME", the correct use of these two United States differentiations must be adhered to and followed by all who refer to "AMEs", especially those in the legislative bodies and regulatory agencies of the world' nations) :
  1. *may be examined* in part by:
    - a) written questions, and
    - b) oral questions
    - c) *may be required* to give practical proof of knowledge
    - d) *will be required* to submit proof of knowledge:
      - (1) For engines :
        - (a) **knowledge of** the general principles of:
          - i) internal combustion engines applied to aircraft, including
          - ii) the general principles of ignition,
          - iii) the general principles of carburation,

## Notes on "Civil Aviation"

- iv) the general principles of lubrication and
  - v) the general principles of cooling ;
  - (b) **knowledge of the:**
    - i) inspection necessary for the installation of the complete power unit in the aircraft,
    - ii) inspection necessary for the functioning of the complete power unit in the aircraft,
    - iii) testing necessary for the installation of the complete power unit in the aircraft,
    - iv) testing necessary for the functioning of the complete power unit in the aircraft,
    - v) adjustments necessary for the installation of the complete power unit in the aircraft,
    - vi) adjustments necessary for the functioning of the complete power unit in the aircraft **and**
  - (c) the **capacity** to:
    - i) **supervise** running repairs [being accomplished by mechanics], or
    - ii) **inspect** running repairs [being accomplished by mechanics] **and / or**
  - (d) the **capacity** to:
    - i) **supervise** the overhaul [being accomplished] of particular engines [by mechanics], or
    - ii) **inspect** the overhaul [being accomplished] of particular engines [by mechanics].
- (2) For flying machines :
- (a) The **general principles of:**
    - i) the construction;
    - ii) the rigging;
    - iii) the trueing up; and
    - iv) the adjustment of flying machines;**and**
  - (b) a **detailed knowledge of:**
    - i) the construction,
    - ii) the adjustments,
    - iii) the maintenance, and
    - iv) the final inspection of the flying machine's components;**and**
  - (c) the **capacity to:**
    - i) **supervise** running *repairs*, or
    - ii) **inspect** running *repairs*,**and /or**
  - (d) the **capacity to:**
    - i) **supervise** the **overhaul** of specified types of flying machines, or
    - ii) **inspect** the **overhaul** of specified types of flying machines.
- VII. Aircraft certified daily by such licensed ground engineers will be periodically re-inspected by a person or persons - **duly authorised by the Secretary of State**, who reserves the right to suspend or revoke licenses granted as above should such certified aircraft be deemed by him as a result of such examination to be unsafe. [is the ref to "periodically re-inspect" the root of the "Officer" certifying as "Airworthy" above the G.E? and the military "Technical Officer" then having the ability to prevent an aircraft from flying if found to be "NOT Airworthy"? Is this what the pilots have usurped as their legal right simply because they assumed that the T.O was a Pilot signing the release? When did the Secy.-of-State give this role to the civilian pilots? per the regulations, the pilot was simply a "Licensed operator of the craft", nothing more., however at the time the bulk of the pilots were officers - young and uneducated in legal responsibility. If this is the case, then the pilot's have placed themselves in a position of authority higher than their Secretary of state, i.e higher than their legal right allows]
- VIII. Ground engineers certifying flying machines or engines as **airworthy after overhaul, must be in a position to certify that all the conditions required for the inspection of subsequent aircraft during construction that apply to the overhaul** have been carried out.
- IX. *The Secretary of State reserves the right to suspend or revoke the licence of the ground engineer* responsible for certifying that the overhaul has been correctly carried out, should a test inspection be deemed by the former to indicate that the flying machine is not airworthy.

## Notes on "Civil Aviation"

- X. Ground engineers' licences will be issued at a charge of 5s., and will be valid for a period of twelve months, and will then be subject to renewal. (The root for the renewal of AME licenses. It cannot be stressed enough that the US-FAA A&P has NO period of mandatory renewal and that *this condition of renewal only applies to the US-FAA A&P with I.A)*
- XI. The Secretary of State reserves the right to re-examine the candidate for renewal, if considered necessary.
- XII. In the event of any applicant being required to undergo a practical examination, a further fee of one guinea will be charged.

### CERTIFICATES OF SAFETY OF AIRCRAFT : 1919-

#### DAILY CERTIFICATE OF SAFETY OF AIRCRAFT

Flying Machine Type \_\_\_\_\_ Registered No \_\_\_\_\_ Inspection at \_\_\_\_\_ on \_\_\_\_\_ time

"I hereby certify that I have this day examined the above flying machine and that I consider it safe in every way for flights to day when conducted as specified in the Certificate of Airworthiness."

Signed (Ground Engineer) \_\_\_\_\_.

Date: \_\_\_\_\_

#### DAILY CERTIFICATE OF SAFETY OF ENGINE

Flying Machine Type \_\_\_\_\_ Registered No \_\_\_\_\_ Inspection at \_\_\_\_\_ on \_\_\_\_\_ time

"I hereby certify that I have this day examined the engines, engine installations and accessories of the above flying machine, and that in my opinion they are in every way safe for flights to-day."

Signed (Ground Engineer) \_\_\_\_\_.

Countersigned: \_\_\_\_\_.

Date: \_\_\_\_\_.

NOTE.—*Both certificates may be signed by the same individual if licensed for both "flying machines" and "engines".*

### INSTRUCTIONS FOR USE OF LOG BOOKS

With reference to Regulation 2 (3) and Schedule V, the log books should contain the information shown below.

- I. The **constructor should fill in and sign the original entries in the log book**, as far as he is in a position to do so.
- II. Subsequent entries should be made and signed by the pilot or competent person.
- III. A copy of *the certificate of airworthiness should be kept* in the pocket at the end of *the aircraft* log book.
- IV. **All entries to be in ink**, except in the case of journey and signal log books, the entries for these may be made in pencil in a rough notebook, but should be entered in ink in the log book every 24 hours. *In the event of any official investigation the rough notebook may be called for.*
- V. **No erasures should be made in, nor pages torn from, any log book.**
- VI. A copy of these instructions should be inserted in each log book.

### "JOURNEY LOG" : INFORMATION TO BE NOTED

- A. Type to which the aircraft belongs:
- B. its nationality
- C. In addition, for each journey :
  - 1. The name, nationality and residence of the pilot and crew,
  - 2. The place, date and hour of departure,
  - 3. the route followed, and
  - 4. all incidents en route, including landings and weather conditions.

## Notes on "Civil Aviation"

### **"AIRCRAFT LOG" : INFORMATION TO BE NOTED WITHIN**

- A. Type to which the aircraft belongs,
  - 1. its nationality and registration marks,
  - 2. the name, Christian names and nationality and residence of the owner,
  - 3. name of constructor and
  - 4. the carrying capacity (weight in cargo / # of persons), and
  - 5. capacity of tanks (fuel, oil, water).
- B. Type and series number:
  - 1. of engine(s) showing:
    - a) (Serial) number and
    - b) maker's name,
  - 2. type of propeller(s) showing:
    - a) (Serial) number,
    - b) pitch,
    - c) diameter and
    - d) maker's name,
- C. Type of wireless apparatus fitted,
- D. Table showing *the necessary rigging data* for the information of persons in charge of the aircraft and of its maintenance.
- E. A *fully detailed engineering record of the life of the aircraft*, including all:
  - 1. acceptance tests;
  - 2. overhauls;
  - 3. replacements;
  - 4. repairs; and
  - 5. all work of a like nature (see specimen sheet the form of which should be followed).

### **"ENGINE LOG" : INFORMATION TO BE NOTED WITHIN**

- A. *A separate log book shall be kept for each engine* and shall always accompany the engine.
- B. *It shall contain* the following particulars :
  - a) Type of engine,
  - b) series number,
  - c) makers' name,
  - d) Hp rating,
  - e) Normal and maximum revolutions of engine,
  - f) date of acceptance (mfr) and
  - g) first date put into service;
  - h) petrol consumption;
  - i) oil consumption
  - j) Registration mark and type of aircraft in which the engine has been installed,
  - k) A fully- detailed engineering record of the life of the engine, including all:
    - (1) acceptance tests,
    - (2) hours run,
    - (3) overhauls,
    - (4) replacements,
    - (5) repairs and
    - (6) all work of a like nature (see specimen sheet, the form of which should be followed).

### **SIGNAL LOG, INFORMATION TO BE NOTED**

- A. Type to which the aircraft belongs,
- B. its nationality and registration marks
- C. the name, Christian names and nationality and residence of the owner.
- D. Place, date and time of the transmission or reception of any signal,
- E. Name or other indication of the person or station to whom a signal is sent or from whom a signal is received.

A. Specimen sheets are given in "Flight" which show the following details :

- Page 1123 of 1470

## Notes on “Civil Aviation”

Air Navigation Regulations (A.N.R) 1919 issued under order of WINSTON S. CHURCHILL, Secretary of State for Air.<sup>339</sup>

<b>DIARY OF FORTHCOMING RAES EVENTS</b>
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Flight- The Aircraft Engineer & Airships No. 611 (No. 37, Vol XII) cover, Sept 09, 1920

1919 Events<sup>340</sup>

Sept. 8, 9, 10, 1919 .... Federation Aeronautique Internationale Conference, Geneva

Oct. 17, 1919... Lecture on “Civil Aviation” by Sir F.H Sykes

Nov. 01, 1919....First Open Competition for R.A.F. Boy Mechanics

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<sup>339</sup> Flight and the Aircraft Engineer page 615, 8 May 1919

<sup>340</sup> Flight- The Aircraft Engineer & Airships No. 611 (No. 37, Vol XII) cover, Sept 09, 1920



## Air Ministry publication No.970 (Air Pub.970)

<b>STRUCTURAL DESIGN REQUIREMENTS FOR AEROPLANES OF THE ROYAL NAVY AND ROYAL AIR FORCE</b>
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## Air Ministry publication No.1208 (Air Pub.1208)

In the United Kingdom the information gleaned during the Great War about the design and inspection of aeroplanes could not remain the sole realm of the Military's Air Service - the RAF.

A large number of ex-service machines were being purchased by civilians for use as personal transportation and also for commercial ventures.

In addition to the massive knowledge of structural requirements gleaned by the Service, the knowledge of how to inspect as well as what to inspect and what you were looking for that was now known by the Service was going to be needed within the "Civilian" aviation world as the bulk of this knowledge had not been available - nor understood - prior to the war. For the Civilian Aviation world, the Air Ministry compiled a comprehensive book - publication no. 1208 - on the separate subjects of Civil aeroplane "Design" and "Inspection" which was issued in 2 parts. Volume 1 - Design requirements for Civil Aeroplanes and Volume 2 - Inspection requirements for Civil Aeroplanes.

<b>AIR MINISTRY PUBLICATION NO.1208 (AIR PUB.1208) VOL. I - DESIGN SECTION</b>
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<b>AIR MINISTRY PUBLICATION NO.1208 (AIR PUB.1208) VOL. II - INSPECTION SECTION</b>
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## Aeroplane General Sundries (A.G.S) - Standard parts in 1919

<b>AEROPLANE GENERAL SUNDRIES LTD.</b>
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The War has provided many opportunities for successful endeavour, and a case in point is that of **Aircraft General Sundries, Ltd.** Two years before the Great War, a Miss Doris M. Nicholson had "gone mad on flying" and spent most of her time at the Hendon Aerodrome.

Anxious to do something to help on the aircraft industry during the war, Miss Nicholson decided to utilise her business ability by endeavouring to meet the demand for small parts for aeroplanes. Her efforts were so successful that she felt she could launch out for herself, and the result was the birth of **Aeroplane General Sundries, Ltd.** of which Miss Nicholson is the Managing Director. At first a tiny office sufficed, and Miss Nicholson acted as her own buyer, salesman, stenographer, book-keeper and packer, but more and more business flowed her way, and very soon the days of her one-woman business were over. Fresh capital was introduced, representatives were appointed, a factory was started, and so the tale gradually grew until the business became what it is to-day.

Now her firm is branching out into the motor business.

They have excellent commodious premises, where they can handle all motor parts and accessories as well as the old lines of aircraft parts and fittings. They have their representatives throughout the provinces, and have a most complete buying organisation.

flight JUNE 5, 1919

## Air Ministry Notices

Beginning in 1919 / 1920 Notices to Pilots, Ground Engineers and Aeroplane owners were issued by the Air Ministry<sup>341</sup>  
Air Ministry notices concerning aircraft airworthiness were also published in "Flight - The Aircraft Engineer & Airships".<sup>342</sup>

Air Ministry notices were issued to Civil airmen ["airman" means "pilot"] on green paper<sup>343</sup> and concerned such things as:

- a) UK wireless stations in operation in connection with civil air routes, together with the call sign and wave lengths used by each, and the latitude and longitude - there are similar lists for France, Belgium, Denmark, and other countries;
- b) warnings to pilots of temporary obstructions at airfields, etc;
- c) Informing Pilots of the plan for the compulsory examination of pilots in meteorology;
- d) rules governing importation of goods by air into France, Holland, and other countries;
- e) new signposts and lighthouses [the subject of frequent notifications]
- f) Warnings to aviators re the flying of kite balloons at various airship stations
- g) "summer time" regulations in various European countries
- h) the movement of lightships
- i) the enlargement of the "aerial corridor" into France
- j) The revision status to and amendments of the "Consolidated List of Aerodromes for Civil Use" which tabulates all Government-owned aerodromes containing accommodation, all emergency aerodromes, all licensed civil aerodromes, all unlicensed private aerodromes, the nearest railway station, the height of the aerodrome above sea-level, and other particulars.
- k) cloud, visibility, and weather signals displayed at airfields for the information of passing airmen and the simple code on the ground which enables him to see ahead the conditions he will have to fly through

Air Ministry notices were issued to Ground Engineers on yellow paper<sup>344</sup> and concerned technical details such as:

- a) the lightening of bracing wires,
  - b) the disuse of high-compression pistons on a particular type of engine,
  - c) a warning as to the discovery of a weakness in the valve rocker of a certain type of engine,
  - d) a warning that certain control cables should be replaced by a stronger kind,
  - e) a caution that the rubber connections in petrol systems must be frequently examined,
- and many other technical details only understood by the expert.

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<sup>341</sup> Source AERIAL AGE WEEKLY :: FOREIGN NEWS : pg 40 : September 19, 1921

<sup>342</sup> The Official Organ of the Royal Aero Club of the United Kingdom, A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport between Sept 09, 1920 & today.

<sup>343</sup> Source AERIAL AGE WEEKLY :: FOREIGN NEWS : pg 40 : September 19, 1921

<sup>344</sup> Source AERIAL AGE WEEKLY :: FOREIGN NEWS : pg 40 : September 19, 1921

**AIR MINISTRY NOTICES : LIST OF NOTICES TO AIRMEN**

**NOTICE NO. 83 OF 1926 : FITTING OF SAFETY BELTS**

- I. IT is notified that with reference to Notice to Airmen No. 17 of the year 1926 and to the Air Navigation Directions, 1926 (A.N.D. 6), para. 49(1)(i)(a) of which stipulates that<sup>345</sup>:
1. A safety belt must be carried in all flying machines for each person (including the pilot) carried in an open cockpit;
  2. Such equipment must be maintained in working order;
  3. The attention of pilots is drawn to the necessity for ascertaining before flight that the belts are properly secured in all cases;
  4. When a seat is unoccupied the safety belt should be so fastened as to avoid the possibility of fouling the controls.

**NOTICE NO 140 : AUTHORISED PATTERNS OF LOG BOOKS TO BE USED SECTION V "Log Books"**

- I. Of the Directions issued by the Secretary of State for Air, under the Air Navigation Regulations, 1919 [...] 2. The log books shall contain all the information and particulars provided for in the authorised patterns referred to in the preceding paragraph, and the Instructions for Use set-out in the authorised patterns -shall be complied with [...]
- II. For the purpose of this paragraph the term "repairs" shall be deemed to include:
- a) all overhauls,
  - b) replacements,
  - c) repairs and work of a like nature."
- III. Subsequent entries shall be made and signed :
- a) In the case of the journey and signal log book by the pilot, unless there is a commander of the aircraft other than the pilot, in which event the entries shall be made and signed by such commander ;
  - b) In the case of the aircraft and engine log books by the ground engineer ; provided that as regards matters which could not have come to the notice of the ground engineer, the pilot shall be responsible for making and signing the entries.
- IV. All entries shall be made in ink, except in the case of journey and signal log books : the entries for these may be made in pencil in a rough notebook, but shall be entered in ink in the log book every twenty-four hours. In the event of any official investigation the rough notebook may be called for..
- V. No erasures shall be made in, nor pages torn from, any log book.
- VI. A NOTICE (NO. 17) to Ground Engineers has been issued; It is in identical terms to the Notice Airmen No. 140.

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<sup>345</sup> Flight - The Aircraft Engineer & Airships, pg. 864, 30 December 1926

# Listing of UK Air Ministry Notices to Ground Engineers

## AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1919 TO 1920

<b>EXAMINATIONS FOR AVIATION GROUND ENGINEERS - 1920</b>
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AIR MINISTRY COMMUNIQUE NO. 608

The Air Ministry announces : —

Examinations of candidates desiring to become certified ground engineers (aircraft or engines) will be held at the following centres during September and October :—

September.

London, Wednesday, Sept. 15th, and Wednesday, Sept. 29th; Bristol, Tuesday, Sept. 21st; Birmingham, Wednesday, Sept. 22nd; and Manchester, Thursday, Sept. 23rd.

October. —London, Wednesday, Oct. 13th, and Wednesday, Oct. 27th;

Leeds, Tuesday, Oct. 19th; Newcastle, Wednesday, Oct. 20th; and

Glasgow, Thursday, Oct. 21st.

The examinations may be partly written, partly oral, and partly practical. They will be based on the syllabus outlined in Section 4" of the Air Navigation Directions, 1919.

Candidates desiring to be examined can obtain application forms from the Secretary, Air Ministry, London, W.C.2, and should submit their completed forms of application, accompanied by a fee of 5s., at least seven days prior to the date on which examination is desired.

Candidates should also state at which of the above places they wish to be examined.

**NOTICE NO. 1 OF 1920 ACQUAINTING GROUND ENGINEERS WITH TECHNICAL INFORMATION**

- I. It is announced by the Air Ministry<sup>346</sup> that the question of acquainting ground engineers with such technical information in connection with civil aircraft as is essential to the efficient discharge of their duties has been under consideration by the Air Council, resulting in a decision to issue such information periodically in the form of "Notices to Ground Engineers" in a similar manner as information of importance to pilots is now issued in the form of "Notices to Airmen."
- II. "Notices to Ground Engineers" will contain:
- information as to the embodiment of modifications affecting the safety of aircraft and
  - such points in regard to inspection as have been shown by experience to require special attention.
- III. These "Notices" will be issued to:
- all owners of aircraft and to
  - such public bodies as are interested.
- IV. In order that the information circulated in this manner may be of value:
- it is essential that it should reach all licensed ground engineers, and
  - it is therefore incumbent on owners of aircraft as the employers of persons giving certificates of fitness before flight to see that the "Notices" are communicated to and observed by all such persons in their employ.
- V. Further, all ground engineers when receiving their licences for the first time will be advised to ask their employers to acquaint them with these "Notices."

Tolerances for standard holes are in two grades, Classes A and B, the selection of which is for the user's decision, and is dependent on the quality of the work required.

Allowances for shafts are as follows:—

**Force Fits: Class F.**—The shafts made to this table require hydraulic pressure to force them into the holes. The allowances made are also suited for cases where one piece is shrunk on to another by heating and expanding the hole in one piece and allowing it to cool and contract in position on the other piece.

**Driving Fits: Class D.** will produce shafts that need to be **driven** into the holes.

**Push Fits: Class P.**—Shafts made to these limits can be pushed into the holes, but will not be sufficiently free to rotate without seizing.

**Running Fits** are divided into three grades. Class X for engine and other work where easy fits are wanted.

Class Y for high speeds and good average machine work.

Class Z for fine tool work.

The following extract from the "Gauge List" will now render possible a correct interpretation of the drawing:—

TOLERANCES IN STANDARD HOLES: CLASS B.		PRESS FITS: CLASS P.		RUNNING FITS: CLASS Y.	
Nominal Diameters . . .	51 to 75 mm.	Nominal Diameters . . .	26 to 50 mm.	Nominal Diameters . . .	25 to 50 mm.
High Limit . . . . .	+002 "	High Limit . . . . .	+006 "	High Limit . . . . .	+002 "
Low . . . . .	-018 "	Low . . . . .	-010 "	Low . . . . .	-004 "
Tolerance . . . . .	005 "	Tolerance . . . . .	016 "	Tolerance . . . . .	006 "

<sup>346</sup> Flight- The Aircraft Engineer & Airships No. 611 (No. 37, Vol XII) pg. 978 - Sept 09, 1920

**NOTICE NO. 2 OF 1920 : PETROL-RESISTING RUBBER TUBING AND CONNECTIONS**

**Petrol-Resisting Rubber Tubing and Connections**

ATTENTION is called to the necessity of frequent examination of all Petrol-resisting rubber tubing (Petro-Flex) and associated connections used on aircraft to convey petrol, oil, or hot water.<sup>347</sup>

VI. Engine failures in the air have been traced to the use of this material when in a deteriorated condition.

VII. Service conditions during the War have shown that this material must be regarded with suspicion after having been in use for a period of four months for sizes up to f-in. bore and six to nine months for larger sizes.

VIII. This tubing should conform with the requirements of the British Engineering Standards Association Specification No. 2.F.7 in which the requisite number of canvas plies should be:

- a) not less than two for the f-in. bore size,
- b) not less than three for bores ii-in. to i\$-in., and
- c) not less- than four for larger sizes. \_ . J

IX. The most efficient test of this tubing is:

- A. to boil a portion of the tubing in petrol for one hour, to be followed by
- B. immersing in cold petrol for a period of 24 hours, after which
- C. the sample should be examined for the quality of rubber, swelling, and adhesion of rubber to canvas.

Where it is not possible to carry out such a test, an indication of the condition may be obtained by " picking" at the end with the thumbnail, thereby enabling brittleness and lack of adhesion of rubber to the canvas to be detected.

X. Owing to the tendency of this tubing to perish when subjected to extreme temperatures or strong light, it should always be stored in a dark place at a normal temperature and should be coiled in such a manner as to prevent "kinking."

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<sup>347</sup> Flight- The Aircraft Engineer & Airships No. 611 (No. 37, Vol XII) pg. 978 - Sept 09, 1920

<b>NOTICE NO. 3 OF 1920 : STREAMLINE FLYING WIRES</b>
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### Streamline Flying Wires

- I. STREAMLINE WIRES<sup>348</sup> may be damaged<sup>349</sup> whilst being adjusted owing to pliers being employed either to turn the wires or to hold them whilst securing the lock-nuts.
- II. The rough jaws of the pliers make comparatively deep cuts in the surface which develop into cracks after being subjected to vibration in flight, and which ultimately cause the wires to fail.
- III. To obviate such failures a special tool for holding or turning the wires should always be used, and on no account should pliers be employed for this operation.
- IV. Cases have occurred where a wire has been twisted at one end during adjustment, and in one instance a wire was found to have four complete turns in its length.
- V. Twisted wires have their strength seriously reduced, and in addition they no longer fulfil their streamline functions.
- VI. Care is necessary to ensure that the fork ends used on the smaller sizes of wires are not opened out during adjusting.
- VII. If a fork is damaged in this way it should not be closed in to make the shackle pin fit, but a new fork end should be provided before the machine is flown.

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<sup>348</sup> Aeronautical Engineering - Supplement to The Aeroplane, pg 528 September 15, 1920

<sup>349</sup> Flight- The Aircraft Engineer & Airships No. 611 (No. 37, Vol XII) pg. 978 - Sept 09, 1920

<b>NOTICE NO. 4 OF 1920 : SAFETY BELTS AND HARNESSSES</b>
---

### Safety Belts and Harnesses

- I. ATTENTION is drawn to the necessity of ensuring that the fitting and maintenance of safety belts and harness in-aircraft is secure and functions correctly.<sup>350</sup>
- II. Service conditions have shown the necessity of any belt or harness safely withstanding a tensile load of 500lbs. without visible signs of fracture, and that the release gear is capable of operating when the belt is under a load of 200 lbs. In consequence, anchorage fittings should be of the same strength.
- III. Where ropes (Wire) are used for attaching the belts, the strength of the rope should be approximately 10 cwts.
- IV. "Lapped" joints in the ropes are considered "Unsatisfactory" and the use of ropes which allow of a spliced or "Whipped" joint is more satisfactory.
- V. In all cases of "whipping" good quality kite cord should be used and the "whipping" carried out while the joint is under tension in order to minimise the slip when subjected to subsequent strain.
- VI. All loose ends of ropes should be "served" to prevent fraying, and in no case should a rope be connected directly to a plate where chafing may occur.
- VII. Anchorage plates, where secured by bolts, should be so arranged that the shear is taken near the bolt head. instead-of the screwed end, as cases have arisen where the plates bearing on the screwed end have sheared the bolt.
- VIII. The minimum diameter of any bolt to be used in anchorage fittings should be 2 B.A.
- IX. The fixing of an anchorage plate or connection to the middle of a structural member should be avoided, and the belt should be so arranged as to sustain the upper part of the body.
- X. The release gear on the belt should -always be correctly positioned for easy manipulation and should be maintained in a lubricated condition.
- XI. The leather portions of the belt should be periodically treated with linseed oil or wax.

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<sup>350</sup> Flight- The Aircraft Engineer & Airships No. 611 (No. 37, Vol XII) pg. 978 - Sept 09, 1920



<b>NOTICE NO. 5 OF 1920 : CONTROL PULLEYS AND RUNNING CABLES</b>
--

**Control Pulleys and Running Cables**

PARTICULAR attention should be given to control pulleys and running cables on machines operating from the seashore or sandy places.

The cables in the vicinity of pulleys and leads should not be greased on these machines owing to the cutting action of the sand and grit which adheres to the grease.

Flight- The Aircraft Engineer & Airships No. 611 (No. 37, Vol XII) pg. 978 - Sept 09, 1920

<b>NOTICE NO. 6 OF 1920 : NAPIER "LION" ENGINES - OIL FILTERS</b>
---

**Arrangement of Oil Filter on Aeroplanes Fitted with Napier "Lion" Engines**

CERTAIN aeroplanes fitted with the Napier "Lion" engine have the oil filter so fitted that the top of the filter is approximately level with the top of the oil tank.

The oil pipe from the tank leads to the bottom connection on the filter body and the top connection takes the pipe leading to the oil pump.

This arrangement allows the possibility of an air lock forming in the pipes, and if, therefore, any aeroplanes are still in service with the filter fitted as above, the pipes should be re-arranged so that the oil pipe from the tank should lead to the top connection of the filter and the bottom connection should lead to the oil pump.

If, however, the oil tank is fitted above the pressure oil pump inlet, a cock should be fitted in the pipe between the filter and the oil tank. This cock should be capable of being locked in the open position.

It is further recommended that a warning plate should be fixed in a conspicuous position in the pilot's cockpit, directing attention to the necessity for opening the cock before starting the engine and for closing the cock on completion of engine running.

This latter precaution is necessary to prevent oil draining from the oil tank through the pump gears and flooding the engine sump.

Flight- The Aircraft Engineer & Airships No. 611 (No. 37, Vol XII) pg. 978 - Sept 09, 1920

<b>NOTICE NO. 7 OF 1920 : AVRO 504 AND 536 ENGINE STRUT FAILURES</b>
--

Avro 504 and 536 Type Machines

Upper Shoe Fitting for Engine Diagonal Strut (Part 100)

ATTENTION is drawn to the above-mentioned fitting (Part 100) on Avro 504 and 536 type machines.

Instances of the failure of this part have been discovered which, if undetected, might result in failure of structure.

All ground engineers operating should make a special examination of this fitting in all machines of these types under their supervision.

Sept 16, 1920

<b>NOTICE NO. 8 OF 1920 : FITTING OF BALLAST IN AIRCRAFT</b>
--

**Fitting of Ballast in Aircraft**

ATTENTION is drawn to the precautions necessary when fitting ballast in aircraft for trimming purposes.

The ballast should take the form of bags filled with earth or sand, or of weights made of sheet lead.

Bags of small shot or stones should not be used, as experience has shown that such bags wear out quickly and allow the filling to escape.

The bags or covers for the lead should be made of stout canvas or other strong material, and should be provided with adequate means of attachment, such as straps or strong cord, by which they can be secured in the cockpit.

In order to preclude all risk of accidents, such as fouling of controls or falling out of the aircraft, the ballast should always be securely attached in the cockpits.

Air Ministry, Sept 11, 1920 - Published Sept 15 in Flight, Sept 22 in The Aeroplane

<b>NOTICE NO. 9 OF 1920 : DEFECTS IN AIRCRAFT TIMBER</b>
--

### Defects in Aircraft Timber

ATTENTION is drawn to a common defect found in aircraft timber, especially spruce, which is usually known as "Spiral " and sometimes erroneously identified as "Cross Grain."

The existence of such a defect is due to the twisting of the tree during growth, and consequently cannot be determined by a casual examination of the straightness of the grain.

It can, however, be detected by closely examining the direction and inclination of the wood fibres.

It is usually most apparent on the "flower" side of the grain, and takes the form of small resin channels of a brownish colour, running at an inclination to the axis of the strut or spar, as the case may be.

A slight inclination is of no disadvantage, but when the slope is great the timber is liable to break off short.

An indication of the amount of slope, which, from experience, has been found to be satisfactory, is roughly when the inclination of the fibres is not more than 1 in 15.

The defect is more readily found by means of splitting the timber, the angle of the split giving the true slope of the fibres, and when making new timber parts for replacement it is recommended that the part be made slightly longer, to allow for a short piece to be cut off for splitting purposes.

When making such tests the split should be made in two directions :

- (1) In line with the grain, and
- 2 ) At right angles to it.

Air Ministry, Sept 11, 1920 - Published Sept 15 in Flight, Sept 22 in The Aeroplane

<b>NOTICE No. 10 OF 1920 : FUEL SYSTEM CONTAMINATION</b>
--

**Foreign Matter in Petrol Systems.**

It is hereby notified : —

Forced landings may be caused by the presence, of foreign matter in the petrol systems, which is liable to choke the non-return valves, filters, etc., with consequent reduction in the supply of petrol to the engine.

Although petrol systems are designed to be proof against the entry of dirt and other impurities, it is, nevertheless essential that the Ground Engineer should be careful to see that all precautions are taken to keep the petrol system clean.

The following preventative methods are suggested :—

- (1) Clean out filters daily.
- (2) Always use a chamois leather and fine-mesh, gauze petrol funnel when filling tanks.
- (3) Inspect non-return valves and pumps before flight.
- (4) Check petrol flow daily to ensure that there is no stoppage in the pipe.
- (5) Take particular care when fitting new tanks to ensure that they are perfectly clean.

Air Ministry, Sept. 23rd, 1920.

<b>NOTICE NO. 11 OF 1920 : STRENGTH OF CONTROL CABLES</b>
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**Strength of Control Cables**

THE use of 5 cwt cable for aircraft flying controls provides an insufficient margin of safety.

All cables used to repair or replace any part of the flying control system should have a breaking strength of at least 10cwt. (Air Ministry Spec 2.W.2 )

Air Ministry, Sept. 27th, 1920..

Flight- The Aircraft Engineer & Airships No. 41, Vol XII pg 1063. 07 October 1920

<b>NOTICE NO. 12 OF 1920 : AVRO 504 AND 536 ENGINE STRUT FAILURES</b>
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**Avro 504 and 536 Type Machines Upper Shoe Fitting for Engine Diagonal Strut (Part 100)**

WITH reference to Notice to Ground Engineers No. 7 of September 2, 1920, further investigation has revealed that the above-mentioned fitting has shown such signs of weakness that it cannot now be regarded as reliable from the point of view of the airworthiness of the aircraft.

Owners of all British registered aircraft concerned have therefore been notified that the certificates of airworthiness of the machines in question will be suspended unless the following action be taken :—

1. Close inspection of the fitting must be made forthwith 2. In cases where the part is found to have weakened it must be replaced immediately, and before any further flying takes place, by a new fitting as shown on Drawing A.D. 2988.
3. In cases where no sign of weakness has yet shown itself the above replacement need not be made for a period of 3 months from the date of this notice or until the aircraft requires overhaul, whichever period is the shorter, provided that within a week of the date of this notice a reinforcing strap as shown on Drawing A.D.2996 is fitted over the existing fitting.

Ground engineers are reminded that they cannot issue a daily certificate of fitness to fly in the case of aircraft for which a certificate of airworthiness has been suspended.<sup>351</sup>

Air Ministry, Oct. 13th, 1920

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<sup>351</sup> Flight- The Aircraft Engineer & Airships 1920



<b>NOTICE NO. 13 OF 1920 : HANDLEY PAGE 0/400 TAIL PLANE FITTINGS</b>
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**Handley Page 0/400 (Bomber) Tail Plane Fittings**

1. ATTENTION is drawn to the undermentioned tail plane fittings on the Handley Page 0/400 and cognate types, i.e., 0/7, 0/10, 0/11 and 0/14.

- (1) The rudder post attachment fittings (top and bottom) on rear tail plane spars.
- (2) The strut attachment fittings (top and bottom) on front tail plane spars.

Instances of the failure of these parts have been discovered, which if undetected might result in failure of structure. The first signs of failure are small cracks which develop at the base of the lugs supporting the rudder post and interplane struts.

2. Owing to the weakness of these fittings, owners of all British registered aircraft concerned have been notified that the Certificates of Airworthiness of the machines in question will be suspended unless the following action be taken:

a) Close inspection of the fitting must be made forthwith, and if no signs of failure are observed, further inspection must be made after every succeeding period of thirty hours' flying.

For the purpose of these inspections the fabric should be kept permanently removed from the rudder post fittings.

(b) In cases where the part is found to have weakened it must be replaced immediately, and before any further flying takes place, by a new fitting, as shown on Drawing A.D. 2963.

(c) In cases where no sign of weakness has yet shown itself the above replacement need not be made until the aircraft requires complete overhaul, provided that a strengthening clip, as shown on Handley Page Drawing 932, is fitted over the existing fitting within a week of the date of this Notice.

3. Ground engineers are reminded that they cannot issue a Daily Certificate of Fitness to Fly in the case of aircraft for which a Certificate of Airworthiness has been suspended.

Air Ministry, Oct., 23rd, 1920

Flight- The Aircraft Engineer & Airships No. , Vol XII pg.

<b>NOTICE NO. 14 OF 1920 : 120 &amp; 160 HP BEARDMORE ENGINE CARB HEATING</b>
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**Beardmore Engines, 120 H.P. and 160 H.P. Water Pipe, Part No. 1135812.B., connecting the Top Water Rail with the Carburettor Jacket**

1. Certain engines of Beardmore 120 h.p. and 160 h.p. types were supplied with the water pipe made of copper tubing, but owing to cases of failure it became necessary to introduce a modification, and the material was changed to steel to Air Board Specification S.26, the lower end of the pipe being connected by a short length of flexible P.R. tubing.

2. It is therefore recommended that :

- (i) Any engines which have not already been modified should be converted as above before installation in civil aircraft,
- (ii) In cases of failure of this pipe in any engine not so converted and already installed, this modification be introduced forthwith.

Air Ministry, Nov. 23rd, 1920.

Flight- The Aircraft Engineer & Airships No. 49, Vol XII pg 1240. 02 Dec. 1920  
Aeronautical Engineering (supplement to "The Aeroplane") December 1, 1920 pg 850

<b>NOTICE NO. 15 OF 1920 : HIGH COMPRESSION PISTONS IN SIDDELEY ENGINES</b>
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**Siddeley "Puma" Engines: Disuse of High Compression Pistons**

1. SIDDELEY " PUMA " engines, manufacturers' numbers from 8199-9982, were fitted with high-compression pistons As the result of Service experience it was decided to convert these engines to low compression, by replacing pistons, part No. 703/19, with pistons, part N o. 703/10a.
2. A considerable number of these engines have already been converted, and can be identified by reference to the Log Book, or to the statement stencilled on the crankcase.
3. Ground engineers operating should ensure that all " Puma" engines in use or intended for use in civil aircraft are converted as above. In all such cases the letters " HC " on the crankcase and the compression ratio figures on the instruction plate should be defaced, and a note inserted in the Log Book.
4. After converting an engine to low compression, a test run of at least 30 minutes' duration should be made, and if lubrication and pistons appear satisfactory on inspection, a short test at full power should be given.
5. *No aircraft equipped with a Siddeley "Puma" engine fitted with high-compression pistons can be granted a Certificate of Airworthiness.*

Air Ministry, Nov. 27th, 1920.

Flight - The Aircraft Engineer & Airships No. 49, Vol XII pg 1240. 02 Dec. 1920

<b>NOTICE NO. 16 OF 1920 : GROUND ENGINEER LICENSE RENEWALS &amp; A.M NOTICES</b>
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**Renewals of Licences : Complete sets of Notices Necessary.**

It is hereby notified :—With reference to Notice to Ground Engineers No. 1 (Explanatory Statement), all Ground Engineers will in future, when applying for renewals of their licences, be required to submit proof that they have received a complete set of Notices to Ground Engineers issued up to date.

All Ground Engineers will be supplied regularly with free copies of "Notices to Ground Engineers" on application to the Secretary (C. of, 1.), Air Ministry, London, W.C.2  
Air Ministry, Dec. 17th, 1920.

<b>NOTICE No. 17 OF 1920 : ENTRIES REQUIRED IN LOG BOOKS</b>
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**Authorised Patterns of Log Books to be used : A.N.D 1919 SECTION V "Log Books "**

**Log-Books** shall contain all the information and particulars provided for in the authorised patterns referred to in the preceding paragraph, and the Instructions for Use set-out in the authorised patterns -shall be complied with [...]

The constructor shall fill in and sign the original entries in the log books as far as he is in a position to do so. Subsequent entries shall be made and signed:

In the case of the aircraft and engine log books by the ground engineer ;  
provided that as regards matters which could not have come to the notice of the ground engineer, the pilot shall be responsible for making and signing the entries.

4. All entries shall be made in ink, except in the case of journey and signal log books : the entries for these may be made in pencil in a rough notebook, but shall be entered in ink in the log book every twenty-four hours. In the event of any official investigation the rough notebook may be called for..

5. No erasures shall be made in, nor pages torn from, any log book. For the purpose of this paragraph the term " repairs " shall be deemed to include all overhauls, replacements, repairs and work of a like nature.

see also Air Ministry - Notice to Airmen # 140: Air Navigation Directions Amendments.

Flight - The Aircraft Engineer & Airships No. , Vol XIII pg. 06 January 1921

## AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1921

<b>NOTICE NO. 1 OF 1921: STRUT ROT IN LOWER SOCKETS</b>
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In several instances recently it has been noted that lower ends of wooden inter-plane and centre-section struts have rotted in the sockets <sup>352</sup> <sup>353</sup> due to prolonged exposure the of the aircraft to the weather under winter flying conditions.

2.The attention of Ground Engineers is therefore directed to the necessity of a careful examination of this portion of all such struts.

3. The tendency of the strut end to rot can be materially reduced by providing some arrangement to prevent water from entering the socket, thus obviating constant contact between moisture and the end grain of the strut.

(Authority: Air Ministry Notice to Ground Engineers No. 18 of the year 1921.) —

### Laminated and Built-Up Spars

In all cases where airplanes have laminated or built-up spars, these are to be examined for opening up of glued joints. If a joint has only opened up an inch or two the spars should be bound with glued tape and varnished, but if the opening extends along the spar or if there are several bad places on one spar, then that spar must be scrapped. This action has been necessitated by the fact that bad cases of this sort have been found on airplanes in service.

— Canadian Notice to Air Engineers No. 3 - 1921.

(With reference to the above notices it may be noted that some of the Canadian terms differ not only from those used in the United States but also from the terms in use in Great Britain. Canada has introduced the term "air-harbor" for airport, which latter seems to be more convenient on account of its greater brevity. The Canadians also call ground engineers "air engineers", which might lead to some confusion the day when large aircraft will carry among their crew licensed engineers in charge of the power plant.

An agreement on such and similar terms as far as they affect English speaking peoples would therefore appear highly desirable. Editor. Aviation Weekly - 13 June 1921)

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<sup>352</sup> Flight - The Aircraft Engineer & Airships No. 8, Vol XIII pg 129. 24 February 1921

<sup>353</sup> Aviation Weekly - 13 June 1921 Notice to Canadian Air Engineers No. 1, 1921. which referenced "Authority: :Air Ministry Notice to Ground Engineers"

<b>NOTICE NO. 2 OF 1921 : TOP OVERHAUL OF ENGINES AFTER STORAGE</b>
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1. All engines that have been in storage or unused in machines for more than three months since previous running, as recorded in the log-book, should be subjected to top overhaul before being passed by the Ground Engineer for flight.<sup>354</sup>
2. The internal condition of the engine should be carefully examined for signs of corrosion, particular attention being paid to cylinder bores and all ball and roller bearings.
3. In addition to the usual precautions taken after top overhaul to ensure that all parts of the engine, including ignition and carburation systems, function correctly, special attention should be given to the flushing of all oil-ways, flushing, cleansing, adjustment, refilling, etc., of lubricators, filters, etc.

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<sup>354</sup> Flight - The Aircraft Engineer & Airships No. 8, Vol XIII pg 129. 24 February 1921

<b>NOTICE NO. 3 OF 1921 : ROLLS-ROYCE "EAGLE" ENGINES : FITTING OF EPICYCLIC GEAR</b>
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ROLLS-ROYCE " Eagle " engines fitted with high compression pistons will, in future, not be regarded as airworthy unless fitted with the modified epicyclic gear, incorporating friction damped control to the sun wheel.

Engines provided with the old type epicyclic reduction gear can be accepted only with standard low compression pistons.

Engines in service which do not conform with the above conditions should be modified at the first opportunity.

A number of engines with the old type reduction gear have already been modified by the makers by fitting low compression pistons ; such engines are stamped with the letter " K " on the name-plate above the maker's name.

Flight - The Aircraft Engineer & Airships, 1921



<b>NOTICE NO. 4 OF 1921 : 80 AND 110 H.P LE RHONE : WEAK VALVE ROCKER SUPPORT</b>
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THE original type of valve rocker support or Tee piece fitted to earlier engines of the above types has been found to be weak to an extent which renders the engine unairworthy unless fitted with safety clips of sheet-steel to Air Ministry Drawing (A.D) No. A.B.3634.

Such clips must, therefore, be fitted in all cases where the above type of valve rocker support is fitted.

In fitting these clips care must be taken to ensure that the holes for the pins through the fins on the cylinder heads are drilled in such a manner as to prevent the clips tearing away.

The defective type of Tee piece in some cases has been further weakened by the drilling of a tommy-bar hole at right angles to the housing of the horizontal bearing, and in all cases may be readily recognised, as the vertical stems are tapered instead of parallel.

This type should be replaced at the first opportunity by the English type, which has a parallel vertical stem drilled with a 10mm hole.

Flight - The Aircraft Engineer & Airships, 03 March 1921

<b>NOTICE NO. 5 OF 1921 : DUAL CONTROL IN PASSENGER AIRCRAFT</b>
--

EXPERIENCE having shown that the presence in passenger-carrying aircraft of "dual controls", which can be interfered with by passengers is a source of danger.

1. It has been decided that the daily certificate required from a ground engineer will be held to have been given improperly in cases where an aircraft fitted with dual control is used for passenger carrying without proper arrangements being made for the prevention of interference with the dual control.
2. Suitable protection can be given by removing the control lever and by the provision of a suitable cover which will allow for the movement of the dual rudder bar, control link and cables, and by adequately protecting or disconnecting the dual ignition and engine controls.
3. This instruction is not intended to discourage the fitting of dual control, but merely to ensure that when a machine so fitted is used for passenger carrying the necessary precautions will be taken.

N.B.—This Notice was issued in circular form to aircraft owners in October, 1919.

Flight - The Aircraft Engineer & Airships, 03 March 1921

<b>NOTICE NO. 6 OF 1921 : THROTTLE CONTROL FOR NAPIER "LION" ENGINES</b>
--

IT is highly desirable that all aircraft fitted with Napier "Lion" engines with a compression ratio of 5-5 to 1 or 5-8 to 1 should be provided with an approved Gate type throttle control, with the object of limiting, in normal conditions, the travel of the throttle lever at altitudes below 5,000 ft.

In such cases a warning plate should be displayed in the pilot's cockpit to the following effect:-

"The throttle control lever must not be moved through the Gate except when above 5,000 ft. or in cases of emergency."

Attention is also drawn to the fact that propellers for such aircraft should be so designed as to allow the engine to run at 1,800 r.p.m. on the ground as a minimum.

Flight - The Aircraft Engineer & Airships, 23 June 1921

<b>NOTICE NO. 7 OF 1921 : OVER-TIGHTENING OF BRACING WIRES</b>
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1. THE attention of Ground Engineers is directed to the detrimental effect of over-tightening bracing wires or rods.
2. In truing u p aircraft, o r when making flight adjustments by means of turnbuckles, etc.,great care must be exercised to ensure that no undue stress is produced in any member of the structure.

Flight - The Aircraft Engineer & Airships, 21 July 1921

<b>NOTICE NO. 8 OF 1921 : PAINTING OVER INSPECTION STAMPS</b>
---

1. WHEN painting aircraft, care must be taken that the inspection stamps on the parts so painted are not obliterated.
2. Ground Engineers are responsible for ascertaining that all parts of the aircraft have been manufactured under the conditions laid down in Air Navigation Directions, Section III, Paragraphs 20 and 21, and Inspection Stamps are the only evidence that these conditions have been fulfilled.

Flight - The Aircraft Engineer & Airships, 22 Sept, 1921.

**NOTICE NO. 9 OF 1921 : BRISTOL "TOURER" AND "FIGHTER" : AILERON CONTROL PULLEYS**

1. The existing arrangement of aileron pulley guards on the Bristol "Tourer" and Bristol "Fighter" type aircraft used for civil purposes is such that the aileron control and balance cables tend to "jam" between the pulleys and their guards, and accidents on this type of aircraft have been attributed to this cause.

2. Modified pulley guards, in accordance with Drawing •No. A.D. 3329, should be fitted to all civil aircraft of the above type at the earliest opportunity.

The only new fittings required are the new pulley guard and shackle shown in the drawing, and, since the guard is split, the new fittings can be assembled in position on the aircraft over the existing cable, without it being necessary to renew the latter.

3. It is also advisable that seven-strand cable should be used in preference to four-strand cable for these and other controls.

4. Copies of Drawing No. A.D. 3329 may be obtained on application to the Secretary (C.A.L.), Air Ministry, Kingsway, W.C. 2.

5. New certificates of Airworthiness will not be granted, nor will existing certificates be renewed, unless the new type Of pulley guards have been fitted to the aircraft.

Flight - The Aircraft Engineer & Airships, 13 October 1921

<b>NOTICE NO. 11 OF 1921 : DE HAVILLAND 4 AND 4A : FUSELAGE WIRING PLATES</b>
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1. The attention of ground engineers is directed to the fuselage wiring plates (Part No. 10653) taking the fuselage cross bracing behind the engine and to the washer plates (Part No. 10654) on the other side of the longerons in D.H.4 and 4A aircraft, instances having occurred in which, after a heavy landing, the wiring plates have pulled away from and the washer plates bedded into the longerons, with consequent damage to these members.
2. Close and frequent inspection of the wiring plates, washer plates, and longerons should be made, especially after a bad landing.
3. Conditions may be improved by replacing the washer plate (Part No. 10654) by a triangular washer plate of increased size and thickness, viz., 10 G. Steel or duralumin plate, measuring 9 ins. in length (along longeron) and 3 ins. in overall width.

Flight - The Aircraft Engineer & Airships, 13 October 1921

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1922**

**NOTICE NO. 1 OF 1922 : MAINTENANCE OF A.V. 8 AND A.V. 12 TYPE MAGNETOS**

THE following precautions should be observed with A.V. 8 and A.V. 12 type magnetos :—

1. Lubrication.—Before starting up an engine fitted with a magneto which has been drawn from store or has not been run for some time, care must be taken to ensure that the oil well of the distributor bearing, which is of the plain phosphor- bronze type with wick lubrication, is filled, by passing approximately a teaspoonful of oil down the left-hand hole in the oil cup at the distributor end of the magneto (facing the distributor). Six drops of oil should also be injected into each main bearing through its respective oil cup ; one or two drops to the contact breaker cam lubricating pad, and one to the contact breaker pivot pin. To effect the last, it is only necessary to move the retaining spring to one side.

This provision of oil should normally be sufficient for twelve hours' running.

Thereafter, at similar intervals, twelve drops of oil should be given to the distributor gear wheel bearing, with treatment of the other bearing as stated above.

2. Contact Breaker.—The gap between the contact breaker points should be maintained within  $\cdot 013$  in. and  $\cdot 011$  in. A gap of  $0.012$  in. may be regarded as normal.

The contact breaker points, which are slightly convex, should be cleaned, if necessary, with very fine emery cloth, care being taken to ensure that no emery dust is left on the contact breaker.

A file should not be used for this purpose.

A soft brush is convenient for cleaning the contact breaker.

3. Distributors.—In changing the magnetos on an engine, it is essential that the original distributor block should be removed, and the new magneto attached complete with its own distributor. The changing of a distributor block from one magneto to another is most undesirable, owing to the possibility of the rotor brush fouling the distributor segments, due to the small gap between these parts and to the working tolerances necessary on distributor, end plate, gear centres, etc.

The setting of the spark gap between the rotor main electrode and the distributor segments must be correctly maintained within the limits of  $0.010$  in. and  $0.015$  in.

Normally it should be unnecessary to interfere with this gap, which is correctly set for each individual magneto before its despatch from the maker's works.

The gap between the rotor starting electrode and the distributor segments should be between  $\cdot 020$  in. and  $\cdot 030$  in.

4. Hand Starter Terminal.

Care must be taken, when fitting the starter lead to the distributor, that the terminal screw is properly locked by the spring strip provided for the purpose.

The screw should be tightened by a box spanner which at the same time will press down the spring clear of the hexagon ; on release, the spring should lock the screw, the latter being turned slightly, if necessary, to ensure this. No part of the screw or the locking spring must project beyond the face of the distributor.

Flight - The Aircraft Engineer & Airships, pg 23, 12 January 1922



<b>NOTICE NO. 2 OF 1922 : AVRO 504K TYPE AIRCRAFT : GRAVITY TANKS</b>
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1. The gravity tank on the top centre section is to be considered a standard fitting on Avro 504K aircraft.
2. No Certificate of Airworthiness in respect of this type of aircraft will be issued unless a gravity tank is fitted.
3. No renewal of an existing Certificate of Airworthiness in respect of this type of aircraft will be granted unless a gravity tank is fitted.
4. These gravity tanks are obtainable from Messrs. A. V. Roe and Co., Ltd.

Flight - The Aircraft Engineer & Airships, pg 160, 16 March 1922

<b>NOTICE NO. 3 OF 1922 : "PETROFLEX" TUBING AND JOINTING</b>
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The following precautions should be observed when using " Petroflex " tubing :—

1. The ends of piping or connections to be joined by means of "Petroflex" should be parallel, with sharp edges removed.
2. Pipes should enter the short lengths of "Petroflex" up to the first corrugation, but no further.
3. On no account must the lining of the tubing be stretched or contracted by attempting to fit it to connections of a size other than that for which it was manufactured.
4. Ends of " Petroflex " joints should be slightly •jell- mouthed (to the extent of approximately -fa in.) in order to prevent the lining from being forced back or injured when assembling.
5. Care should be taken not to twist or disarrange the tubing during assembly.
6. Gold size may be applied to the connections before fitting the tubing. This facilitates assembly and makes a good joint. On no account should soft soap or oil be used as a lubricant for this purpose.
7. Tubing must be securely fixed by means of approved hose clips.
8. " Petroflex " must not be used in either water or lubricating oil systems.
9. " Petroflex " tubing should be stored in a dry place.

Flight - The Aircraft Engineer & Airships, pg 160, 16 March 1922

<b>NOTICE NO. 4 OF 1922 : BRISTOL "TOURER" AND "FIGHTER" : AILERON CONTROLS</b>
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1. T H E attention of ground engineers is directed to the aileron control cable fairlead which passes through the compression rib adjacent to the aileron control pulley in the wing on Bristol " Tourer" and Bristol " Fighter" aircraft.
2. Instances have occurred of aileron control cables badly fouling these fairleads during normal travels of the ailerons.
3. When fitting modified pulley guards as detailed in Notice to Ground Engineers No. 9 of 1921, or in cases where they have been fitted, it will be necessary for the fairlead through the compression rib adjacent to the pulley to be deleted.
4. The hole remaining in the compression rib should be elongated to allow the aileron control cable to clear at all positions of the pulley.

Flight - The Aircraft Engineer & Airships, pg 234, 21 April 1922

<b>NOTICE NO. 5 OF 1922 : AVRO 504K TYPE AIRCRAFT : LIFT WIRE FITTINGS</b>
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1. The attention of ground engineers is directed to the necessity of ensuring that the wiring plate and socket (Join H, item 1.F.103) taking the duplicate lift wires at the upper end of the outer rear interplane struts (port and starboard) on Avro 504K aircraft are of standard pattern.
2. The standard fitting is made up of 14 S.W.G. plate, the lower part, which carries the socket and wiring lugs, being reinforced on its upper face by the addition of a plate of similar thickness (item 18F.80), joined by edge welding, but cases have come to notice in which this part of the fitting has consisted of a single plate only.
3. All licensed Avro 504K aircraft should be examined forthwith, and any single plate fittings found should be replaced by standard fittings.
4. No Certificate of Airworthiness will be issued or existing Certificate of Airworthiness renewed in respect of any aircraft of this type unless the standard fittings are incorporated.

Flight - The Aircraft Engineer & Airships, pg 271, 11 May 1922

<b>NOTICE NO. 6 OF 1922 : RE-BALANCING OF PROPELLERS AFTER RE-TIPPING OR REPAINTING</b>
---

1. GROUND engineers are reminded that when propellers are re-tipped or even re-painted, it is essential that they be properly re-balanced before being replaced on aircraft.

2. Such re-balancing can easily be carried out by fitting a metal or hardwood plug into the boss of the propeller, such plug carrying a 1-in. diameter steel spindle, which is, in turn, supported by two steel knife edges.

The propeller should be balanced while under test by the application of additional paint or varnish as may be necessary.

Flight - The Aircraft Engineer & Airships, pg 304, 25 May 1922

**NOTICE NO. 7 OF 1922 : REPAIR OR OVERHAUL OF LICENSED AIRCRAFT : APPROVAL OF MATERIALS**

1. GROUND Engineers licensed in categories " B " and " D " are reminded that, before they can certify as airworthy aircraft and/or aero-engines that have been repaired or over- hauled, they must have evidence that all materials used in such repair or overhaul have been proved by test, at an approved test house, to comply with all the requirements of the appropriate specification.
2. Similar proof that the material is correct is essential for spares or fittings purchased and built into aircraft or aero engines, and, should the spares be of such a nature that a complete inspection is impossible on the finished part, the Ground Engineer should ascertain that the manufacturing process or internal workmanship, which cannot be seen in the finished article, has been satisfactorily carried out.
3. Many manufacturers of aircraft materials and spare parts are able to issue certificates with regard to material, process inspection and/or workmanship.
4. Where such certificates cannot be obtained, the Ground Engineer must make other suitable arrangements to prove the condition of the material.
5. Ground Engineers licensed only in categories " A " and " C " are reminded that they are not empowered to certify repairs or overhauls.

Flight - The Aircraft Engineer & Airships, 22 June 1922

**NOTICE NO. 8 OF 1922 : FLEXIBLE RUBBER CONNECTIONS IN AIRCRAFT**

THE attention of Ground Engineers is directed to the following information with regard to the maintenance of flexible rubber connections as fitted to aircraft :

1. The term " rubber joint " as used in this notice is to be taken to include all flexible rubber connections in aircraft or on aero engines, for oil, petrol or water.
2. Rubber joints fitted to engines or aircraft that have been stored for a period exceeding three months should be regarded as serving only as dust excluders. Immediately before the engine and/or aircraft first takes the air, all rubber joints throughout the machine should be renewed, the date of the renewal being entered in the aircraft and/or engine Log Books.
3. New joints thus fitted may be considered serviceable for three months from the date of fitting. They should, however, during this period, be frequently examined and renewed if deterioration be detected.
4. After having been fitted for three months, all rubber joints for petrol should be considered under suspicion, and should be frequently and carefully examined. Any signs of restricted flow, collection of particles of rubber in the filter and/or such fittings as three-way petrol cocks, must be carefully watched for, as an indication of the condition of the rubber joint.

At least once a month, a joint should be taken out of the petrol system and examined internally and for reduced adhesion between the plies. Immediately any such deterioration is detected, the whole of the joints in the petrol system should be replaced.

In every case, all rubber joints for petrol should be renewed six months after the date of fitting.

5. Similarly, joints in the oil and water systems should be specially examined after having been fitted for three months, and periodically removed, but, in these cases, they need not be renewed until the first signs of deterioration are apparent. In the water system the joints that usually deteriorate most rapidly are those through which the water flows at its highest temperature.
6. It is pointed out that deteriorated joints can always be detected by simple examination. Chemical and other special tests are only required to detect liability of deterioration.
7. Great care should be taken that the result of each examination and the date of renewal of all rubber joints are recorded in the Log Books. Particular care should also be exercised that, when fitting rubber joints, all sharp edges at ends of pipes be removed before the rubber tubing is slipped on, as, unless this is done, damage to the interior of the tubing will result. Consequent on such damage, particles of rubber detected in the filters might create the impression that exceptionally rapid disintegration is taking place.
8. All rubber connections, where stored, should be kept in cool, dark and damp places.
9. Cancellation.  
Notice to Ground Engineers No. 2 of 1920 is hereby cancelled.

Flight - The Aircraft Engineer & Airships, pg 425, 27 July 1922

**NOTICE NO. 9 OF 1922 : INSPECTION AND CERTIFICATION OF INSTRUMENTS**

1. THE attention of Ground Engineers is directed to Article 11 and Schedule II, para. 8, of the Air Navigation Order, 1922, and to paras. 29, 35, 37, 41, 42 and 43 of the Air Navigation Directions, 1922 (A.N.D. 3), in so far as these relate to the instruments to be carried by British flying machines registered in the British Islands, and to the inspection and certification of such instruments.

2. These in consequence of the dangers resulting from the frequent ascents of and altitudes attained by the captive balloons flown from the Chalais-Meudon establishment (south-west of Paris and east of Versailles), all aircraft are prohibited from flying at any altitude over the area defined by the following points :—

To the South.—The village of Petit Bicestre (on the Versailles-Choisy le Roi road).

To the West.—" La Garenne de Villacoublay," " La Grange Dame Rose " and " l'Etang des Fonceaux."

To the North.—That part of the Paris-Montparnesse-Versailles railway from Bellevue Station to the Meudon viaduct. To the East.—The north-east edge of the Clamart wood and

the road from Chatillon to Le Petit Bicestre.

2. Previous notice affected : Notice to Airmen No. 44 of 1922. (No. 87 of 1922.) Belgium : Circuit Rule for Aircraft in the Vicinity of State Aerodromes

1. In future all circuits made by aircraft on departing from public aerodromes owned by the Belgian State shall be left-handed, i.e., anti-clockwise.

In the event of there being an exception to this rule, a further notice will be issued.

2. Authority.—Belgian Notice to Airmen No. 12 of 1922. (No. 95 of 1922.)

Publications may be obtained direct from H.M. Stationery Office, Imperial House, Kingsway, W.C. 2, or through any bookseller, at a cost of nrf. and 3d. respectively.

2. It will be observed that on and after November 1, 1922, certain instruments must be carried by all British flying machines registered in the British Islands, and that the inspection and certification of such instruments before flight, in accordance with Schedule II, para. 8, of the Order, must be carried out, except in the case of the instruments specified in (d) of para. 35 of the Directions (A.N.D. 3), by a Ground Engineer licensed in Category E.

3. Arrangements have accordingly been made whereby licensed Ground Engineers who are desirous of having their licences extended to cover Category E "inspection of the instruments" other than those specified in (d) of para. 35 of the Air Navigation Directions, 1922 (A.N.D. 3) can undergo examination for this purpose.

These examinations will be held in London from September 1 onwards.

In the case of Ground Engineers operating at the London Terminal Aerodrome, Croydon, arrangements will be made for the examination to take place at that station, while in the case of Ground Engineers operating in the provinces, examinations may be arranged during October if the number of applications received is sufficient to warrant special " Boards " in provincial centres.

Applications for examination should be made to the Secretary (D.C.A.), Air Ministry, and should be accompanied by the necessary fee of 5s.

Candidates will be informed of the date and time fixed for examination.

Applicants for licences under this category may apply to be licensed for all the instruments specified in paras. 41 and 42 of the Air Navigation Directions, 1922 (A.N.D. 3), other than those specified in (d) of para. 35 thereof, or for such instruments only as the nature of their employment may require them to certify.

The minimum requirements for a licence will be ability to pass an examination in the following instruments, which must be carried by all flying machines: Air speed indicator, altimeter, gauges, revolution indicator.

5. The examinations will be based on the following syllabus :—

(1) Air Speed Indicator.—General principles of construction and operation—Installation of indicator and pitot head in the aircraft—Pipe lines—Methods of testing—Detection and rectification of defects in installation.

(2) Altimeter.—General principles of construction and operation—Installation in aircraft—Method of testing.



## Notes on "Civil Aviation"

(3) Gauges (including air and oil pressure gauges and radiator thermometer).—General principles of construction and operation—Installation in aircraft—Methods of test.

(4) Revolution Indicator.—General principles of construction and operation—Installation in aircraft—Causes of failure to function.

(5) Indicator of Wheel Position.— General Principles of operation.

(6) Compass: General Principles of construction and operation of various types—Installation in aircraft—"Swinging" of compass—Maintenance and minor adjustments.

(7) Turning Indicator.—General principles of construction and operation of the various types—Installation in aircraft - Methods of testing and minor adjustments to installation.

(8) Watch.— Installation in aircraft—Setting and adjustments

(9) Lighting Set (including navigation lights, landing lights and illumination of instruments).—General principles of lay-out and installation in aircraft—Wiring diagrams— Tracing of defects—Care and maintenance of instruments connections and accumulators General knowledge of standard requirements with regard to electrical installation in aircraft.

(10) Electrical Bonding (in the case of aircraft fitted with Wireless Apparatus).—Methods of jointing—Points where bonding is necessary and position of same—Methods of testing for electrical continuity—External wiring of approved wireless apparatus—General knowledge of standard requirements with regard to electrical installation in aircraft .

( 11 ) Drift Indicator.—General principles of construction and correct methods of installation in aircraft.

(6) The descriptive handbook issued as Air Publication 388, " General Instrument and Oxygen Equipment " (1921), will be of use to candidates for this examination. This handbook may be obtained direct from H.M. Stationery Office, Imperial House, Kingsway, W.C. 2, or through any bookseller, price 5s. net.

Flight - The Aircraft Engineer & Airships, pg 519, 07 Sept 1922



<b>NOTICE NO. 11 OF 1922 : ROLLS-ROYCE "EAGLE VIII" ENGINES : FRICTION ANCHORAGE</b>
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THE correct method of assembling the friction plates, whether keyed or not, in the anchorage unit of Rolls-Royce "Eagle VIII" engines is as follows:

- (1) Fit anchor ring G. 6405 into the epicyclic gear-box G. 6386.
- (2) Slip in one of the non-keyed plates (which are stiffer than the friction plates, with the object of sustaining the load).
- (3) Place in position the various keyed plates one after another.

In one or two instances recently it has been observed that the non-keyed or backing plate has been left in position in the aluminium gear-box, and the anchor ring then added. Since, in this way, the backing plate is left with no spigot attachment, it has jammed back underneath the anchor ring and cracked the aluminium case which supports it.

Flight - The Aircraft Engineer & Airships, pg 674, 16 November 1922

**NOTICE NO. 12 OF 1922 : W/T INSTALLATION AND EARTH SYSTEM : STANDARD REQUIREMENTS**

1. THE attention of Ground Engineers licensed in Category E (10), Electrical Bonding, is directed to the Air Ministry standard requirements in respect of the W /T Installation and Earth System in aircraft.
2. Ground Engineers responsible for signing daily certificates of safety for aircraft in which W/T apparatus is installed may obtain copies of these requirements on application to the Secretary (D.C.A.), Air Ministry, London, W.C. 2.

Flight - The Aircraft Engineer & Airships, pg 706, 30 November 1922

**NOTICE TO AIRMEN NO. 92 OF 1922 : SWINGING OF COMPASSES IN AIRCRAFT**

1. Compasses in aircraft, owing to their delicate construction, are liable to be thrown out of t r u th by many different causes. A compass should, therefore, be swung whenever, for any reason, there may be a doubt as to its accuracy. In particular, the compass should be swung :—
  - (1) On change of position of any magnetic material in the vicinity of the compass, such as change of an engine, electrical or Wireless equipment, etc.
  - (2) On replacement of the compass in an aircraft by another.
  - (3) After the aircraft has been standing in one position for four weeks or more {e.g., after undergoing overhaul or large repairs}.
  - (4) At any time when the accuracy of the deviation table is open to doubt.
  - (5) In addition, after a bad landing, the cap and pivot should be tested.
2. Pilots should keep a constant watch on the behaviour of, and take every opportunity to test, their compass whilst flying over a long stretch of road or railway, the magnetic bearing of which has been ascertained beforehand. It is only by the constant use of the compass during fine weather and when the ground is visible that pilots will obtain sufficient confidence in the reliability of their compass to enable them to be assisted by i t under adverse weather conditions.

Flight - The Aircraft Engineer & Airships, pg 498, 31 august 1922

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1923**

<b>NOTICE NO. 1 OF 1923</b>
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**Watford C.6. Type Magnetos**

1. IT has been found that the original type of Contact Breaker Rocker Arm fitted on the Watford C.6. type magneto is liable to fracture due to the development of cracks in the sharp square corners between the lug carrying the platinum contact screw and the web of the rocker arm.
2. A new type of rocker arm, strengthened by the provision of fillets in the corners referred to, has now been standardised in accordance with Modification No. D. 1817.
3. All engines fitted with the above type magnetos in licensed aircraft should be examined forthwith, and any original type rocker arms replaced.
4. Certificates of Airworthiness will not be issued, nor existing Certificates of Airworthiness renewed in respect of any aircraft fitted with Watford C.6. type magneto unless the new type of contact breaker rocker arm is fitted.

Flight - The Aircraft Engineer & Airships, pg. 461, 02 August, 1923

**NOTICE NO. 2 OF 1923 : HIGH TENSILE STEEL FORK ENDS AND TURNBUCKLES**

**High Tensile Steel Fork Ends A.G.S. 168 to 178 and High Tensile Steel Turnbuckles A.G.S. 138 to 149<sup>355</sup>**

1. High tensile steel fork ends, A.G.S. 168-178, have been found unsafe, and their use on any aircraft is prohibited. Ground engineers should, therefore, make a careful examination of all aircraft under their charge with the object of replacing any such fork ends by mild steel fork ends conforming to A.G.S. 412-422, or B.E.S.A. Specification S.P.3. The following table gives the A.G.S. numbers of the H.T.S. fork ends and of the M.S. fork ends which replace them:—  
A.G.S. Nos. of prohibited H.T.S. fork ends : 168 169 170 171 172 173 174 175 176 177 178  
A.G.S. Nos. of M.S. fork ends superseding the above : 412 413 414 •415 416 417 418 419 420 421 422  
M.S. fork ends are identified by the flats on the ends of the forks, together with the counterboring which extends down each side of the fork gap, whereas H.T.S. fork ends are readily distinguished by the small ribs at the sides of the pin holes.
2. The use of high tensile steel turnbuckles, A.G.S. 138-149, on civil aircraft is still permitted, but, as these turnbuckles are all of War-time manufacture, they should be carefully re-inspected to ensure that no faults have developed during service. The particular defects to be guarded against are fine hair cracks and flaws in the steel ends, and season-cracking of the barrels. (This class of turnbuckle may be readily identified by the A.G.S. number stamped on each turnbuckle.)
3. When replacing any high tensile steel turnbuckle by a mild steel turnbuckle conforming to A.G.S. 490-497, particular care should be taken to ensure that the former is replaced by its equivalent in the latter class. The following table gives, in each class, the respective A.G.S. numbers of the turnbuckles which are interchangeable in respect of strength and diameter of pin :—  
A.G.S. Nos. of old design of H.T.S. turnbuckle : 140 141 142 143 144 145 146 147 148 149  
A.G.S. Nos. of mild steel turnbuckles of equivalent strength : 491 492 506 493 507 494 508 495 496 497  
Note.—The one exception is M.S. turnbuckle A.G.S. 490, for which no strictly interchangeable H.T.S. size exists, as A.G.S. 138 and 139, which it replaces, were made with two eye-ends only and not with the customary fork and eye-ends.
4. In the case of seaplanes and flying boats, turnbuckles with mild steel barrels should not be fitted owing to their liability to rust ; turnbuckles with delta metal barrels (B.E.S.A. Specification B.1) should be fitted to this class of aircraft.
5. No Certificates of Airworthiness will be issued, or existing Certificates of Airworthiness renewed, in respect of any aircraft on which high tensile steel fork ends are fitted.

<sup>355</sup> Flight - The Aircraft Engineer & Airships, pg. 661, 25 October 1923

<b>NOTICE NO. 3 OF 1923 : NAPIER "LION" ENGINE VALVES AND SEATS</b>
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**Napier "Lion " Engine Valves and Seatings** <sup>356</sup>

1. The fitting of valves and valve seatings in Napier " Lion engine cylinders requires special attention in order to prevent distortion, overheating and stretching of the valves in service.
2. When new valves or seatings have been fitted to an engine during overhaul, it is essential that the faces of both valves and seatings should be examined after the first two hours' running and trued up by grinding in, or machining if necessary, before the engine is approved for flight.
3. Re-cutting of valve seats must be done with the seating screwed in position. The thickness of the flange of the seat after re-cutting, with normal width of valve face, must not be less than  $\frac{1}{8}$  in. ; this permitting of a total reduction of flange thickness of  $\frac{1}{16}$  in.
4. Cylinder headers should not be removed from cylinders or valve seatings extracted unless for the purpose of actual renewal.

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<sup>356</sup> Flight - The Aircraft Engineer & Airships, pg. 661, 25 October 1923

<b>NOTICE NO. 4 OF 1923</b>
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**Napier "Lion " Engines : Precautions**

1. Type Engines : Compression Ratio.

Only the Series II low compression Napier " Lion " engines are approved as airworthy for civil aircraft.

The high compression engines are for use under the service conditions of the Royal Air Force.

The actual compression ratio of an engine is stamped on the name plate, and is also noted in the log book.

(a) High Compression.

5:8 to 1 is the standard high compression, and this type of engine is rated at 450 b.h.p. at normal r.p.m.

(b) Low Compression.

5:0 to 1 is the standard low compression, and this type of engine is rated at 425 b.h.p. at normal r.p.m.

2. Fuel.

It is essential that the fuel used should contain at least 30 per cent, of aromatic hydrocarbons, viz: far Eastern or Borneo spirit is used, it is necessary that 15 percent, of benzole be added.

(b) If an American spirit is used, it is necessary that 25 percent, of benzole be added

3. Connecting Rods

Only the heavy type connecting rods to assembly No, 10823 may be fitted. Medium and light type rods must be replaced.

Where light type rods have to be replaced, new pistons will also have to be provided owing to the variation in the gudgeon pin diameter

It is further recommended that oil filters be opened up, cleaned and examined after each flight. Should particles of white metal be found, the engine should be dismantled for thorough examination and overhaul.

4. Cancellation: Notice to Ground Engineers No. 10 of 1921 is cancelled.

Flight - The Aircraft Engineer & Airships, pg. 661, 25 October 1923



## Notes on "Civil Aviation"

### **NOTICE NO. 5 OF 1923 : MAINTENANCE OF A.V.8 AND A.V.12 TYPE MAGNETOS (AMENDMENT)**

1. THE following amendments are made to Notice to Ground Engineers No. 1 of 1922 :— ... ' -V, Paragraph 3—Distributors.

Page 2, line 3. For "limits of .010" and .015", read "limits of .018" and .022"

Page 2, line 7. For "between .020" and .030", read "between .025" and .030"

2. The amendments should be noted on existing copies of the Notice in question, and will be incorporated in the reprinted copies which will be issued, as required in future.

Flight - The Aircraft Engineer & Airships, pg 729, 29 November, 1923

### **NOTICE NO. 6 OF 1923 :**

### **NOTICE NO. 7 OF 1923 :**

### **NOTICE NO. 8 OF 1923 :**

### **NOTICE NO. 9 OF 1923 :**

### **NOTICE NO. 10 OF 1923 :**

### **NOTICE NO. 11 OF 1923 :**

### **NOTICE NO. 12 OF 1923 :**

### **NOTICE NO. 13 OF 1923 :**

### **NOTICE NO. 14 OF 1923 :**

### **NOTICE NO. 15 OF 1923 :**

<b>NOTICE No. 16 OF 1923 :</b>
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**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1924**

<b>NOTICE NO. 1 OF 1924 : THE AIR NAVIGATION ORDER, 1923</b>
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**Air Navigation (Consolidation) Order, 1923**

IT is notified :—

1. The Air Navigation (Consolidation) Order, 1923, came into operation as from January 1, 1924, revoking on that date the Air Navigation Orders, 1922 and 1923. Attention is drawn to certain effects of the new Order, as follows:

2. Log Books, etc.

The journey log book to be kept in respect of every British aircraft registered in Great Britain and Northern Ireland is to be one issued by the Secretary of State.

These books will be issued on demand by the Air Ministry at a price of 4s. each.

Each book will be issued in respect of an individual aircraft, and the page containing the description of the aircraft will be completed by the Air Ministry.

The certificate of airworthiness of the aircraft is to be kept in the pocket of the journey log book, and all aircraft so registered are required to carry this log book when flying.

The aircraft and engine log books are no longer required to be carried in the aircraft.

3. Smoking in aircraft.

Smoking in aircraft registered in Great Britain and such aircraft may be, or in any other aircraft when in or over Great Britain and Northern Ireland.

NOTE: This Notice was issued as Notice to Airmen No. 105 of 1923, and is now republished for the benefit of Ground Engineers.

Flight - The Aircraft Engineer & Airships, pg. 47, 24 January 1924

<b>NOTICE NO. 2 OF 1924 : ENGINE CONTROL SWITCHES</b>
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**Engine Control Switches on Aircraft Fitted with Dual Control**

It is notified :—

1. Every civil aircraft which has a rotary engine, is fitted with dual control and is used for the preliminary training of pupils, must be provided with a master switch so situated that it can be operated only by the instructor. Aircraft fitted with a master switch are to have the following notice posted near the engine switch in the pupil's cockpit :

"CAUTION" Before controlling the starting of the engine by this switch see that it is not cut out by the master switch."

2. Aircraft fitted with dual control and used for advanced training need not be fitted with a master switch.

3. All switches must be readily accessible for the instant operation of the instructor or pupil as the case may be, but it should not be possible for any switch to be accidentally operated. Indicator plates, showing clearly the direction of operation, should be fitted near all switches.

4. The direction of operation of switches is to be standardised as follows :—

(a) Ordinary control switches : down for "off" up for "on" or running position.

(b) Instructor's master switch, when fitted: down to include pupil's switch in circuit, up to cut out pupil's switch.

5. The provisions of Ground Engineers Notice No. 5 of the year 1921 in regard to the protection of controls must be observed when aircraft fitted with dual control are used for passenger carrying.

(No. 2 of 1924) Flight - The Aircraft Engineer & Airships, pg. 67, 31 January, 1924

<b>NOTICE NO. 3 OF 1924 : INTERNAL INSPECTIONS OF FABRIC-COVERED COMPONENTS</b>
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**Periodical Internal Inspection of Fabric-Covered Components**

1. ATTENTION is directed to the necessity for a periodical inspection of the internal details of fabric-covered components, particularly in the case of components incorporating spars of laminated construction

2. The inspection of aircraft by representatives of the Secretary of State for the purpose of renewal of the Certificate of Airworthiness, which normally takes place at yearly intervals, will accordingly in future include inspection of the internal details of fabric-covered components, and the certificate will not be renewed without such internal inspection. Under existing methods of construction of such components, this will necessarily involve the opening up of the fabric to a considerable extent, and in some cases the complete stripping of the component may be required.

NOTE : This was also published as Notice to Airmen No. 5 of 1924

Flight - The Aircraft Engineer & Airships, pg. 77, 07 February, 1924

<b>NOTICE NO. 4 OF 1924 : AIRCRAFT CABLE WRAPPING / LACING CORD</b>
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**Standard Straining Cord in Aircraft Cables**

THE use of straining cord which is protected against corrosion by galvanising only is prohibited on account of the unreliability of soldered joints, due to the difficulty of obtaining good adhesion between the solder and the galvanised surface.

2. Only straining cord with a tinned surface is permissible. The galvanising of the individual strands previous to the drawing of the wire is permissible provided the strands are subsequently tinned previous to the manufacture of the straining cord.

3. Galvanised extra flexible cables, however, are still permissible, as the splices of this class of cable do not require a soldering operation.

Flight - The Aircraft Engineer & Airships, pg. 256, 01 May, 1924

<b>NOTICE NO. 5 OF 1924 : REPAIR OF BLOW-HOLES IN ENGINE CASTINGS BY SOLDERING</b>
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**Aluminium Soldering of Blow-Holes in Aero Engine Castings : Precautions**

No process of aluminium soldering or welding has been approved by the Air Ministry for the repair of broken or cracked aero engine parts.

2. Any small blow-holes that are found in accepted castings and are unlikely to influence the strength or reliability of the part should be left untouched.

To secure a sound oil or water-tight joint face, however, a screwed plug should be applied to the filling of the defect wherever possible.

3. If screwing, as in paragraph 2, is not feasible, aluminium soldering may be employed, provided that the blow-hole is such that the filling is properly keyed into the casting so that it cannot shake loose under vibration.

The part to be treated should be uniformly heated up to a temperature not exceeding 250 degrees C. in a suitable oven or furnace providing an even and controllable temperature.

The small blow-holes to be filled must be carefully scraped and scratch-brushed before soldering, after the completion of the heating operation, and no flux must be used.

A blow lamp is not under any circumstances to be used in the soldering operation, but a soldering iron only.

Details of the process as carried out should be recorded in the engine log book.

(No. 5 of 1924.) Flight - The Aircraft Engineer & Airships, pg. 256, 01 May, 1924

<b>NOTICE NO. 6 OF 1924 : OPERATING SPEEDS OF CIVIL AIRCRAFT ENGINES</b>
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**Engines in Civil Aircraft : Running Speeds**

1. THE approval of engines for civil aircraft is based on the satisfactory completion by a representative engine of type tests, and the Certificate of Airworthiness of an aircraft is subject to the continued use of the engine in the aircraft under the conditions of power and speed upon which this type approval was granted.

2. As a result of each such type test " maximum " and " normal " engine speeds are laid down.

The running of engines at, or in excess of, the maximum permissible speed, for more than a few minutes at a time in emergencies, is prohibited, since it inevitably tends to the early deterioration of the engine and increases its liability to breakdown.

3. The following table gives the normal and maximum permissible speeds of all British-built airworthy engines:

Engine	H.P Rating	Normal RPM	Maximum RPM
B.R. 1	150 Hp	1250	
B.R. 2	200 Hp	1250	
Gnome - Mono	200 Hp	1250	
LeRhône	80 Hp	1250	
LeRhône	110 Hp	1250	
Beardmore	120 Hp	1250	
Beardmore	160 Hp	1250	
Green	35 Hp	1250	
Green	100 Hp	1250	
Sunbeam "Dyak"	100 Hp	1250	
Siddeley "Puma"	100 Hp	1250	
R.R. "Hawk II"	100 Hp	2200	
R.R. Falcon III	100 Hp	1500	
R.R. Eagle VIII	100 Hp	1620	
R.R. Eagle IX	100 Hp		
R.R. Condor I and II	100 Hp		
R.R. Condor II	100 Hp		
Sunbeam Maori III	100 Hp		
Sunbeam Manitou	100 Hp		
Wolseley Viper	100 Hp		
Napier Lion	100 Hp		
Bristol Jupiter IV	100 Hp		
Bristol Lucifer	100 Hp		
Bristol Cherub	100 Hp		
Siddeley Jaguar III	100 Hp		
Siddelev LvnX	100 Hp		

(No. 6 of 1924.) Flight - The Aircraft Engineer & Airships, pg. 267, 08 May, 1924

<https://www.flightglobal.com/pdfarchive/view/1924/1924%20-%200267.html?search=ground%20engineers>



<b>NOTICE NO. 7 OF 1924 : AVRO 504K LIFT WIRE FITTINGS</b>
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**Avro 504K Type Aircraft: Lift Wire Fittings**

1. THE attention of Ground Engineers is directed to the necessity of ensuring that the wiring plate and socket taking the duplicate lift wires at the upper end of the outer rear interplane struts (port and starboard) on Avro 504K aircraft are of standard pattern.
2. The standard fitting is made up of two plates, item 1.F.103 and item 18.F.80. The first, in 14 S.W.G. Plate, carries the socket and wiring lugs, and is reinforced on its upper face by the second item in 16 S.W.G. plate, but cases have come to notice in which this part of the fitting has consisted of a single plate only.
3. All licensed Avro 504 K aircraft should be examined forthwith, and any single plate fittings found should be replaced by standard fittings.
4. No Certificate of Airworthiness will be issued or existing Certificate of Airworthiness renewed in respect of any aircraft of this type unless the standard fittings are incorporated.
5. Cancellation.—Notice to Ground Engineers No. 5 of 1922 is cancelled.

(No. 7 of 1924.) Flight - The Aircraft Engineer & Airships, pg. 388, 12 June, 1924

<b>NOTICE NO. 8 OF 1924 : "I" SECTION SPARS IN BRISTOL F.2.B. TOURER</b>
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**Bristol F.2.B. and Bristol Tourer Type Machines : Strengthening of "I" Section Spars**

1. The attention of the Ground Engineers is directed to the necessity of ensuring that in cases in which the front spars of top main planes and top centre sections are of I-section, they shall be strengthened by glueing and screwing J in. three-ply to the underside of the top centre plane and of the inner bays of the top main planes.

The three-ply should extend from the leading edge to the rear of the front spar.

2. Planes having I-section spars can readily be identified by the examination of the exposed ends of the spars.

3. No Certificate of Airworthiness will be issued or Certificate of Airworthiness renewed in respect of any aircraft of above types with I-section spars unless these have been strengthened in the manner indicated.

(No. 8 of 1924.) Flight - The Aircraft Engineer & Airships, pg. 388, 12 June, 1924

<b>NOTICE NO. 9 OF 1924 : DRILLING OF MAIN PLANE SPARS IN AVRO 504, 536, 548 AND 552</b>
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**Avro 504, 536, 548 and 552 Types Aircraft : Drilling of Main Plane Spar**

1. THE attention of Ground Engineers is directed to the necessity for observing the following inspectional precautions during overhaul of the main planes fitted to the above types of aircraft.
2. The packing blocks on the top and bottom of the spars should be removed and the stripped spars carefully examined. Special points to be noted are :—
  - (a) That the vertical holes through the packing blocks at the interplane strut fittings do not penetrate the spar itself.
  - (b) That no cases of double drilling of the vertical holes for the bolts carrying the aileron control pulley have occurred.
3. After such inspection new packing blocks should be temporarily fitted in position in such a manner that they may be drilled and then removed so that the drilling may be inspected. The packing blocks should then be fitted in the approved manner.
4. The horizontal and vertical spar drillings which take the bolts securing the outer rear strut socket fittings (top and bottom) should be examined to see that these drillings do not cut into one another.
5. No certificate of airworthiness will be issued or renewed in respect of any aircraft of the above types, constructed or overhauled subsequent to the date of issue of this Notice unless the above precautions have been observed. (No. 9 of 1924) Flight - The Aircraft Engineer & Airships, pg. 734, 09 October, 1924

**NOTICE NO. 10 OF 1924 : INSPECTION MARKS ON AIRCRAFT AND/OR AERO ENGINES**

**Inspection Marking on Aircraft and/or Aero Engine "Detail parts and Components"**

1. ALL aircraft for which an Air Ministry Certificate of Airworthiness is desired are required to have all detail parts and components suitably marked in accordance with the provisions of paras. 20 and 21 of A.N.D.3.

These markings take the form of legible impressions of a stamp on the part or component whereby the individual responsible for the inspection thereof may be readily identified.

Similarly, when repairs, replacements, or overhauls are undertaken to aircraft in possession of an Air Ministry Certificate of Airworthiness, Ground Engineers licensed in categories B and D must ensure that all new detail parts and components used on the aircraft bear inspectional markings.

2. These inspectional markings signify :—

- (a) That there is definite evidence that all materials used and the processes of manufacture involved have been previously approved by an authorised inspector (see Notice to Ground Engineers No. 7 of the year 1922);
- (b) That the material is free from defects so far as can be determined by visual examination ;
- (c) That the workmanship is satisfactory as regards quality, truth and final assembly ; and
- (d) In the case of assembled components that the assembly is complete and bears the necessary inspectional markings.

(No. 10 of 1924.) Flight - The Aircraft Engineer & Airships, pg. 734, 20 November, 1924.

**NOTICE TO AIRMEN**

Official Air Routes : Observance of Regulations

1. THE attention of all pilots is drawn to the Air Navigation (Consolidation) Order, 1923, Schedule IV, Section III, paragraph 31, which requires that :—

" An aircraft flying along or in the neighbourhood of an officially recognised air route shall, so far as it may be safe and practicable,—

- (a) Keep to the right-hand side of the route at a distance of not less than 100 yards therefrom.
- (b) When flying beneath low clouds, fly at such a distance below the clouds as will enable it readily to see and be seen.
- (c) When crossing from one side of the route to the other, cross at right angles thereto and as high as reasonably practicable.
- (d) When flying on the left of and parallel to the route keep a distance therefrom of not less than 7 miles."

2. Certain portions of the following routes have been officially recognised by the authorities concerned :—

London-Paris. Vide Notice to Airmen No. 64 of 1922.

London-Brussels. „ „ „ „ 5 of 1923.

Paris-Brussels. „ „ „ „ 23 of 1923.

London-Rotterdam-Amsterdam. ~)

Amsterdam-Berlin. ( ^ Vide Notice to Air-

Rotterdam-Berlin, r men No. 8 of 1924.

Rotterdam-Brussels-Paris. J

3. Instances have recently occurred in which pilots have been careless in the observance of the above rules which have been expressly designed for the general safety of all aircraft.

## Notes on "Civil Aviation"

4. The importance of rigidly adhering to these regulations cannot be too strongly accentuated, and all pilots are invited to report at once to the Secretary, Air Ministry (D.C.A.), any infringements which may come to their notice.  
(No. 22 of 1924.)

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1925**

**NOTICE NO. 1 OF 1925 : CONSTRUCTION OF D.H.4, D.H.9 AND D.H.9A MAIN PLANE SPARS**

1. THE attention of ground engineers is directed to the necessity for observing the following inspectional precautions during overhaul of the main 'planes fitted to the above types of aircraft.
2. Each spar should be carefully examined for general quality of the timber, which must be one of the following :
  1. Sitka spruce,
  2. West Virginia spruce or
  3. Oregon pine.
3. In addition the type of spar construction must be specially noted to ensure its being one, or other, of the following:
  1. Vertically laminated spars containing two or three laminations either continuous or with one lamination spliced ; spliced as for a solid spar ; having a half spar of two laminations spliced to a half spar of three laminations ; or having a solid half spar spliced to one of two or three laminations.
  2. Horizontally laminated spars containing laminations with butt joints in the inner laminations, but with the top and bottom laminations continuous, or containing continuous laminations throughout.
3. Box spars with continuous or jointed flanges, and sides.
  1. **These spars are entirely covered with glued-on fabric which renders inspection difficult.**
  2. This fabric or taping should be examined for dis-coloration which reveals the presence of moisture.
  3. If such dis-coloration be present the entire spar should be unwrapped, as in all probability failure of the glued joints may have occurred.
  4. If, on the other hand, no defects are visible stripping of the fabric need not be made, but a careful examination of the fabric wrapping must be made for any signs of shakes or broken joints.
4. All box spars must be provided with 1/8 in. inspection holes indicating the positions of the internal packing blocks.

If no such holes are present, 1/8 in. holes must be drilled on one vertical face of each spar on the neutral axis close up to, and verifying, the correct positions of both ends of each packing block.
5. **Splices must be carefully examined for soundness.**
6. The only approved types of splice are:
  - a) the plain scarf and
  - b) the R.A.E. type, the latter taking the form of a dovetail splice with a central square wedge.

**The "bird's mouth" type of splice is not permitted.**

(chart here: <https://www.flightglobal.com/pdfarchive/view/1925/1925%20-%200097.html?search=ground%20engineers> )

(Copies of these drawings when necessary may be obtained application from the Secretary (R.D. 3), Air Ministry, on Kingsway. W .C.2. on pre-payment.)

7. No certificate of airworthiness will be issued or renewed in respect of any aircraft of the above types, constructed or overhauled subsequent to the date of issue of this Notice unless the above precautions have been observed.

(No. 1 of 1925.) Flight - The Aircraft Engineer & Airships, pg.97, 19 February, 1925

<b>NOTICE NO. 2 OF 1925 : "PETROFLEX" TUBING</b>
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IT is notified that the use of internally un-armoured "Petroflex" tubing in aircraft shall be discontinued forth- with. No certificate of airworthiness will be issued or renewed in respect of any aircraft on which the above instruction has not been carried into effect.

(No. 2 of 1925.) Flight - The Aircraft Engineer & Airships, pg.97, 19 February, 1925

<b>NOTICE NO. 3 OF 1925 : INDEX OF OPERATIVE [IN-FORCE] NOTICES</b>
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The following Notices to Ground Engineers are cancelled :

- a) 1920 : Nos. 2, 6, 7, 13 and 17.
- b) 1921 : No. 10.
- c) 1922 : Nos. 5 and 9.

Ground Engineers and others in possession of the Notices should check their sets and, if they find them to be incomplete, should apply for the Notices which are missing to :

The Secretary (D.D.A.T.)  
Air Ministry,  
Kingsway, London  
W.C.2.

Flight - The Aircraft Engineer & Airships, pg. 282, 07 May, 1925



**NOTICE NO. 4 OF 1925 : ROLLS ROYCE "FALCON III" ENGINE : MODIFICATIONS**

THE undermentioned modifications, 1 to 10, all of which have been individually established for several years, are considered essential, and must be included in any "Falcon III" engine, which does not already contain them before it is passed as airworthy :

1. The planet expanding bolt in the epicyclic gear must be replaced by new bolt Pt. No. G. 6196 together with nut, washer and cones.
2. Where two Watford 6-cylinder magnetos are fitted, they must be replaced by two B.T.H. 12-cylinder magnetos and strengthened platforms.
3. Shouldered studs, together with castellated nuts and split pins, must be used to secure the distributor rotor on the B.T.H. magneto.
4. A vent hole must be provided in the distributor bearing and the oil level raised.
5. A tab washer must be provided for locking the nut on the adjustable contact screw.
6. A special washer for locking H.T. insulator for distributor rotor must be provided to prevent the insulator unscrewing.
7. The gap between the main electrode on the distributor rotor and the distributor segments must be increased to 0.020 in., and that between the starting electrode and the distributor segments, to 0.030 in.
8. The approved type fittings must be provided when metal braided ignition cable is used.
9. K.L.G. F. 12 type sparking plugs must be fitted.
10. The material of the petrol valve seating of the carburettor must be of hard drawn brass and be of the new type, giving a bearing surface increased 100 per cent.

The following modifications, 11 to 23, are desirable modifications, which should be embodied whenever possible:

11. Aluminium engine suspension brackets should be replaced by steel ones.
12. The fibre washers on cylinder studs underneath the camshaft casing should be replaced by aluminium ones.
13. Clearance between the rotor and body of the water pump should be increased to overcome the trouble of water freezing. The increase must be obtained by taking material off the pump body and not by reducing the rotor which would affect the efficiency of the pump.
14. The aluminium split nut for camshaft drive housing should be replaced by the strengthened steel nut in one piece.
15. The old type sleeve of camshaft casing stud should be replaced by one provided with a grooved shoulder to overcome oil leakage.
16. The wrist-pin, bolt, and washer of the articulating rod should be replaced by a strengthened type, Parts Nos. E. 16613-4 and E. 6234.
17. The release valve spring should be one made of 17 S.W.G., and should require a load of 5 lb. to compress to 0.755 in.
18. The free end of the reinforced contact breaker springs should be bent inwards slightly in order to prevent chafing at this point.
19. The distributor gear wheel should be balanced with distributor rotor in position by drilling  $\frac{1}{8}$ -in. diameter hole in web.
20. The low-tension connection between the condenser and the contact breaker should be fitted above the condenser clip with a split pin for further security.
21. The aluminium timing lever on contact breaker housing should be replaced by one of brass, as the former is easily fractured.
22. H.T. cable ends should be provided with special thimbles at magneto end in order to provide a better and more secure connection.
23. The swaged type of slow-running jet should be substituted for the early type having the restriction soldered in position.

Flight - The Aircraft Engineer & Airships, pg. 425, 02 July, 1925

**NOTICE NO. 5 OF 1925 : ROLLS ROYCE "EAGLE VIII" ENGINE: MODIFICATIONS**

1. THE under- mentioned modifications, (1) to (9), all of which have been individually established for several years are considered essential and must be included in any "Eagle VIII" engine, which does not already contain them before it is passed as airworthy :—

- (1) Planet wheel bolts of the Oldham coupling type epicyclic gear must be replaced by the new bolt of the hollow or drilled type.
- (2) The ball bearing for the planet wheel of the Oldham type epicyclic gear must be one with 11 balls. Hoffman bearing with 10 balls must be replaced.
- (3) Drain holes must be provided to prevent an accumulation of oil in the starter casing.
- (4) Pistons with compression ratio of 5 to 1 only may be fitted with those engines having the Oldham coupling type epicyclic gear. High compression pistons with 5.3 to 1 ratio may only be used on engines fitted with the friction type epicyclic gear.
- (5) Exhaust manifolds with the old form of welding must be replaced by those whereby the welding flanges are turned back approximately 30 deg., to form positive groove for welding material.
- (6) K.L.G. F. 12 type sparking plugs must be fitted.
- (7) Chater Lea type socket terminals must be fitted on the H.T. cables at sparking plug ends and secured by K.L.G. spring clip. The brass tubular "eyelet" terminal must not be used.
- (8) The new pattern strengthened contact breaker rocker arm must be fitted. This is provided with fillets between web and lug for platinum contact.
- (9) The material of the petrol valve seating of the carburettor must be of hard drawn brass and be of the new type giving a bearing surface increased by 100 per cent, over the old type, which was in gun metal.

2. The following modifications, (10 to 28), are desirable modifications which should be embodied whenever possible :—

- (10) The nipple of the oil relief valve should be of new type with hole of reduced diameter in order to keep the pressure down in the low pressure system.
  - (11) The spring of oil relief valve should correspond to Drawing E. 14423.
  - (12) The rotor of the water pump should be of the type with straight vanes, the curved vane type should be replaced.
  - (13) Clearance between the rotor and body of the water pump should be increased to overcome the trouble of water freezing. The increase must be obtained by taking material off the pump body and not by reducing the rotor which would affect the efficiency of the pump.
  - (14) The fibre washers on cylinder studs underneath cam- shaft casing should be replaced by aluminium ones.
  - (15) The baffles for the camshaft casing rocker should be of a type with radius edges to overcome oil leaks. Old type baffles with square edges should be replaced.
  - (16) The wrist pin, bolt and washer of the articulating rod should be replaced by the strengthened type, Parts Nos. E. 13982, E. 13985 and E. 13986. (Where these parts have already been changed by Messrs. Rolls-Royce the washer is stamped "A").
  - (17) Old type cylinders should be replaced by those provided with corrugated water-jacket.
  - (18) Dowel pins in crankcase for cylinders should be deleted on overhaul.
  - (19) The latest type of valve springs, Part No. E. 9905, should be fitted.
- NOTE.—The compressed pressure is 33 lbs. against 47 lbs. with the old spring and the inside diameter is increased from 1.125 to 1.15 ins.
- (20) The planet roller bearing should be of a type with 17 rollers and a parallel bore.
  - (21) The sun wheel carrier with bores reduced from 4.35 to 4.15 ins. made from special nickel steel, should replace any of the old type made from C.H.N.S.
  - (22) The friction damped epicyclic gear should be fitted.
  - (23) The steel collet of the propeller shaft should be replaced by one of phosphor bronze. (Applies to Engines Nos. 5716 and onwards only.)
  - (24) The aluminium split nut for camshaft drive housing should be replaced by the strengthened steel nut in one piece.
  - (25) The new type of condenser with strengthened lug for earth connection and condenser endplate altered to take

## Notes on "Civil Aviation"

same, should be fitted.

(26) A bakelite bush should be fitted in the rocker arm in place of the red fibre bush originally provided.

(27) The dust cover for the armature housing should be provided with security clip fitting against underside of the distributor bearing,

(28) Swages type of jet should be substituted for the earlier type having restriction soldered in position.

(No. 5 of 1925.) Flight - The Aircraft Engineer & Airships, pg. 424, 02 July, 1925

**NOTICE NO. 6 OF 1925 : SIDDELEY "PUMA" ENGINES: MODIFICATIONS**

1. The undermentioned modifications, (1) to (17), all of which have been individually established for several years, are considered essential and must be included in any "Puma" engine which does not already contain them before it is passed as airworthy :

- (1) A horizontal groove, 4 mm. wide and 5 mm. deep, should be provided in the bottom half of the big end bearing to come within 7-5 mm. of each end.
- (2) The new type oil baffles should be fitted to decrease the oil consumption.
- (3) Connecting rods with strengthened-up big ends must be fitted.
- (4) A dowel must be provided in the big end bearings to prevent rotation
- (5) Low compression pistons, compression ratio 4-95-1, are to be fitted.
- (6) The new type of inlet valve outer spring to take load of 63J lb. as against the original spring of 55J lb. is to be fitted when high lift camshaft is used.
- (7) The inlet valve with solid stem adjusted by cap is to be used when high lift camshaft is fitted.
- (8) The following alterations must be embodied in the lubrication system :—
  - (a) Part No. 701-149.—Oil gallery nipple.—Hole to be opened out J-in. diameter.
  - (b) Part No. 701-145A.—Oil delivery pipe, from filter.— Pipe to be altered to f-in. outside diameter.
  - (c) Part No. 701-33A/B.—Intermediate bearing (701- 34A/B centre bearing).—Hole altered to J-in. dia- meter and countersink altered to " 10 mm. dia. at 90°."

Position of oil groove in top half altered and groove extended round oil hole. Oil groove added in bottom half.

  - (d) Part No. 701-32A/B Front Bearings : Mud groove altered to 2 mm by 3 mm. in each half
  - (e) Part No. 701-35A/B Rear Bearings : Mud groove altered to 2 mm by 3 mm. in each half
  - (f) Part No. 701-74A.— Oil 3-way piece stud.—New to be fitted.

As an alternative modification and in order to adapt the existing part, two holes 5/32 in. diameter can be drilled at right angles to the existing holes, one above and the other below these holes. The new holes must not be drilled right, through but only to the centre.

  - (g) Part No. 701-148A.—Main oil gallery pipe.—Pipe to be increased to 3/4 in. external diameter.
  - (h) Part No. 702-1A.—Crankshaft.—Oil holes in Nos. 3, 5 and 7 journals are to be elongated at top.
- (9) The oil pressure pipes to camshaft to be bent at the top and bottom ends, to run close and be bound to the oil drain pipe, by means of tape lagging, the tape being subsequently varnished.
- (10) The following oil pipes are to be lagged with tape and varnished :
 

701-77.—Crankcase thrust oil pipe.

701-78.—Oil pipe front.

701-145A.—Oil delivery pipe from filter.

701-148A.—Main oil gallery pipe.
- (11) The vertical shaft coupling to be of the serrated type instead of hexagon.
- (12) The material of the union and union nuts to be of gun- metal instead of aluminium to overcome stripping of threads.
- (13) Narrow slots for the air passages in place of large drilled holes to be provided in the altitude control valve in order to limit the range of control and render the action more gradual. Or, alternatively, the altitude control must be rendered inoperative.
- (14) Connecting rod on carburettor, interlocking vacuum control and throttle levers, to be removed.
- (15) Slow running jets.—The number of petrol feed holes to be increased from two to four in order to obviate undue restriction in the petrol supply.
- (16) Feed holes through needle seating to be increased from 1/8 in. to 3/16 in. diameter to increase the available petrol flow.
- (17) The drilled holes from float chamber to the diffuser base to be increased from 1/8 in. to 5/32 in., in order to increase the petrol supply.

2. It is very desirable that all engines be fitted with two magnetos in place of one magneto and one Remy coil ignition set, and be fitted with new type oil base with increased radius to underside of flange securing sump to crankcase, to prevent cracking of flange.

## Notes on "Civil Aviation"

3. The following modifications, (18) to (24), are desirable modifications which should be embodied whenever possible:—

(18) The diameter of the wire of locking ring of the gudgeon pin in the piston should be increased from 14 to 12 G. and gudgeon pin shortened accordingly.

(19) The white metal of the big end bearing and connecting rod should be dove-tailed into the gun-metal casing, and the fitting of the big end bearing on to the connection rod should be tightened to prevent same working loose.

(20) Oil holes in camshaft and extension should be increased from 1/16 in. to 1/8 in. diameter, and a 1/16 in. diameter hole drilled through the shaft immediately behind the rear of the No. 6 exhaust cam into the camshaft bore.

(21) The camshaft bearing should be modified to take die-cast white metal bush.

(22) The new design rocking lever and pins should be fitted to eliminate number of wearing parts.

(23) Swaged type of slow-running jet should be substituted for the earlier type having restriction soldered into position.

(24) A small triangular notch, 5 mm. by 5 mm., should be cut in the leading edge on the top side of the throttle barrel, to obtain slow running.

(No. 6 of 1925.) Flight - The Aircraft Engineer & Airships, pg. 425, 02 July, 1925

<b>CORRECTION TO THE NOTICE TO GROUND ENGINEERS NO. 6 OF 1925</b>
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PARAGRAPH 1 (1) of the above mentioned Notice to Ground Engineers should be amended to read as follows :

"A horizontal groove, 4 mm. wide and 0.5 mm. deep, should be provided in the bottom half of the big end bearing to come within 7.5 mm. of each end."

2. Copies of the Notice in question should be altered accordingly.

Flight - The Aircraft Engineer & Airships, pg. 443, 02 July, 1925

**NOTICE NO. 7 OF 1925 : INSPECTION OF INSTRUMENTS (LICENCE CATEGORY "E" )**

Inspection of Instruments (Ground Engineers' Licence Category "E" )

IT is notified :—

1. It is proposed to abolish Category " E " Ground Engineers' Licences (para. 29, Section 111, A.N.D.3) as from January 1. 1926.
2. On and after that date the inspection of instruments required by (c) of para. 35, Section IV, A.N.D.3, will continue, but may be carried out (for the aircraft instruments) by Ground Engineers licensed in Category " A " and (for instruments connected with the engine or its installation) Category " C."
3. The forms of certificates set out in (a), (b) and (e) of para. 37 of Section IV, A.N.D.3, will be reworded accordingly, so that (a) and (b) will together include (c).
4. Effective January 1, 1926, questions on the prescribed aircraft instruments will be added to the syllabus of the examination for Ground Engineers License Categories " A " and " B," while questions on the prescribed instruments connected with the engine or its installation will similarly be added to the syllabus of the examination for Ground Engineers License Categories " C " and " D."
5. Ground Engineers possessing current licences in Category "A" and Category " E " or Category " C " and Category " E," will be considered competent to sign the new combined certificates.
6. Holders of current licences in Category " A " or Category " C " only (i.e., not including also Category " E ") should apply to the Secretary, Air Ministry (D.D.A.I., LA. [2]), if they wish their licences to be extended to entitle them to sign the combined certificate.
7. Licences in Category " A " or " C " will not be renewed after January 1, 1926, until the Secretary of State is satisfied that the holder has the required knowledge of instruments.

Flight - The Aircraft Engineer & Airships, pg. 785, 26 November, 1925

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1926**

<b>NOTICE NO. 1 OF 1926</b>
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**Locking of Cap on Sump Spindle of A.G.S. Petrol Filter**

IMMEDIATE action should be taken to provide on all aircraft a positive lock for the cap (Pt. No. 8} on the bottom of the sump spindle (Pt. No. 4) of A.G.S. petrol filters, A.G.S. Nos. 600, 601 and 602.

This is to be effected by removing the existing lock nut and sweating the cap to the sump spindle.

In cases where a drain cock or other fitting is substituted for the cap, a similar precaution must be observed.

Flight - The Aircraft Engineer & Airships, pg.116, 25 February 1926

<b>NOTICE NO. 2 OF 1926 : PLUNGER SWITCHES OF R.A.F. MARK H TYPE</b>
--

It is notified that in the case of aircraft fitted with plunger switches of the R.A.F. Mark H type, the following action should be taken :—

- (1) After the stranded conductors have been secured under the terminal screws at the rear of the switch, these connections are to be firmly soldered up to the screw heads and the body of the switch to prevent the possibility of the cables becoming disconnected under vibration.
- (2) Lengths of insulating sleeving of an appropriate internal diameter should first be threaded on the cables before these are connected to the switch ; after the connections have been made as described in (1) above, this sleeving is then to be slid back into position so as to cover all exposed conductors, and is to be secured in position by a whipping of waxed thread.
- (3) At the earliest opportunity the plunger switches of this type should be removed and replaced by others of an approved pattern.
- (4) Attention is specially directed to the fact that certificates of airworthiness will not in any case be renewed until the substitution referred to in (3) above has been carried out.

Flight - The Aircraft Engineer & Airships, pg.322, 03 June 1926



<b>NOTICE NO. 3 OF 1926 : SEPARATING CLIPS FOR STREAMLINE BRACING WIRES</b>
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It is notified a case has occurred in which the brass clip, acting as a clip between duplicate streamline wires, has worn considerably into one of the wires so as to render the wire unserviceable.

Immediate action should be taken to examine the wires under all such clips to ascertain whether any wear has taken place.

Damaged wires should be replaced forthwith.

Flight - The Aircraft Engineer & Airships, pg.732, 11 November 1926

**NOTICE NO. 4 OF 1926**

<b>NOTICE NO. 5 OF 1927 : BOX SPARS IN D.H.4 AND D.H.9 AIRCRAFT</b>
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THE stripping and examination of box spars called for herein must be carried out before any D.H.4 or D.H.9 aircraft is submitted for re-inspection for renewal of Certificate of Airworthiness.

2. In addition to the inspection of box spars called for in Notice to Ground Engineers No. 1 of the year 1925, it will be necessary for the main planes to be opened up sufficiently and the binding of the spars removed locally to establish that the butt joints in the flanges and webs are in accordance with Drawings A.D.1415 and A.D.1416 in type and position, and that such joints are in good condition. Any planes found to contain open or defective joints in the box spars shall be replaced. The joints on serviceable spars shall be re-sealed by means of glued-on tape.

3. Previous to any spare plane, containing box spars, being fitted to the above types of aircraft, the inspection requirements of the preceding paragraph must be met.

4. No Certificate of Airworthiness will be issued or renewed in respect of any aircraft of the above types, constructed or overhauled subsequent to the date of issue of this Notice, unless the above precautions have been observed.

Flight - The Aircraft Engineer & Airships, pg. 785, 10 November, 1927

<b>NOTICE NO. 4 OF 1926 : MAGNESIUM ALLOY CASTINGS</b>
--

IT is notified that owing to the corrosive tendencies of magnesium alloy castings (e.g., electron metal) particular attention must be given to aircraft parts made of this material when periodic examinations are being conducted. Any parts showing depreciation as a result of corrosion must be replaced.

Flight - The Aircraft Engineer & Airships, pg. 865, 30 December 1926

**NOTICE NO. 7 OF 1926**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1927**

<b>NOTICE NO. 3 OF 1927 : TIGHTENING OF NUTS, LOCKNUTS, ETC.</b>
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A SYSTEMATIC investigation of the causes of failure of aero engines and their accessories has brought to light several instances in which the primary cause was the stretching or fracture of studs due to initial over tightening of the nuts.

(2) The actual degree of tension applied to any given stud or bolt obviously cannot be determined by subsequent inspection. Adequate control, therefore, of this phase of erection can be exercised only by a general supervision of the type of tool used and the manner in which it is applied to each class of job.

(3) Ground engineers should accordingly take special care to ensure that the types of spanner used in the assembly of the various parts and components of aircraft, engines and their accessories are not likely in normal use to subject the threaded member to excessive loading and further, that the effectiveness of such spanners is not augmented by the use of additional pipes or hammering up. Particular attention is directed to the possible over tightening and or maltreatment of locknuts on streamline wires and tie-rods, through the use of unsuitable tools.

(4) The normal length of spanner appropriate to the various sizes of studs or bolts can be ascertained by reference to B.E.S.A. Specification No. 192.1924 —British Standard Spanners.

Flight - The Aircraft Engineer & Airships, pg.658, 15 September 1927

**NOTICE NO. 8 OF 1927 : MODIFICATIONS TO "MOTH" AIRCRAFT W/ "CIRRUS" ENGINE**

RENEWALS of Certificates of Airworthiness will not, in future, be granted until the aircraft embodies the modifications referred to herein. Ground engineers should, therefore, ensure that all such aircraft, for which they are responsible, have these modifications embodied.

This requirement is applicable to " Moth " aircraft of the following types :— D.H.60, Mark I ; D.H.60, Mark II ; D.H. 60X, Mark II.

(2) Fuel System.—The fuel system is to be modified in accordance with the following drawings :—  
Mod. D.H.'60/Mk.1 Drg. U/691 and M. 789; Mod. D.H./60/Mk.2,'G.A. 1074 and M. 790 ; Mod. D.H./60X/Mk.2'G.A. 1095 and M. 791.

A brief description of the above modification is given as follows :—•

(a) Owing to the risk of air lock the existing type cock is replaced by a modified type of cock.

(6) The pipe line between the tank and carburettor is increased from J in. diameter to  $\frac{1}{2}$  in.

The reason for this modification is that there is a possibility with the present system, under certain conditions of head of petrol, etc., for an inadequate supply of petrol to reach the carburettor.

(3) Mixture Control.—The carburettor mixture control is to be modified in accordance with Mod. No. Moth/518. This alteration makes the inter-locking between the mixture regulator and throttle levers of a more positive character, thereby removing the present risk of the throttle lever being sprung past the mixture regulator lever and so leaving the latter in a partially or fully closed position.

(4) The vent in the main fuel tank must be kept clear and maintained in the standard position with the opening facing forward and cut off at an angle of approximately 45°.

Flight - The Aircraft Engineer & Airships, pg.873, 22 December 1927

<b>NOTICE NO. 9A OF 1927 : REPAIRS TO CIVIL AIRCRAFT</b>
--

GROUND engineers are reminded that repairs to aircraft or engines which they are permitted to carry out under Paragraph 47 of the Air Navigation Directions (A.N.D.6), are limited to repairs which do not involve any modification of the detail design of the approved type of aircraft or engine.

(2) Repairs which do alter the detail design of the approved type must be regarded as modifications and dealt with as laid down in Paragraph 26 (ft) of A.N.D 6

(3) Information as to the method of obtaining approval of any contemplated method of repair can be given by the Inspector in Charge, A.I.D., at the works of the constructor of the aircraft or engine concerned.

(4) Ground engineers licensed in categories B and D must satisfy themselves that:

1. this design approval has, in fact, been obtained before they certify repairs of this description and
2. must include a reference to the authority received in the aircraft or engine log-book entry.

Flight - The Aircraft Engineer & Airships, pg.873, 22 December 1927



<b>NOTICE NO. 9B OF 1927 : ENGINE INSTALLATION REQUIREMENTS: FIRE PREVENTION</b>
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The operation of notice to ground engineers No. 6 of 1927 on the above subject is hereby suspended until further notice.

Flight - The Aircraft Engineer & Airships, pg.873, 22 December 1927

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1928**

<b>NOTICE NO. 1 OF 1928 : AVRO 504N "LYNX" MODIFICATIONS</b>
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THE modifications described herein must be embodied in all existing Avro 504N " Lynx " aircraft before any such aircraft is submitted for re-inspection for renewal of the Certificate of Airworthiness.

2. Modification No . 19.—The present design of petrol-cock control handle in the front cockpit is unsuitable owing to the ease of accidental operation. This handle must be replaced by a knurled disc or similar type of handle.

3. Modification No . 21.—The altitude control lever is unsuitable in its present form, due to the facility with which it can be accidentally operated. The lever must be shortened by approximately 2 inches.

4. No certificate of airworthiness will be issued or renewed in respect of any Avro 504N " Lynx " aircraft unless the above modifications have been embodied.

5. Drawings of these modifications can be obtained on application and prepayment from the Drawings Library, Air Ministry, Kingsway, London W.C.2

Flight - The Aircraft Engineer & Airships, pg. 166, 08 March, 1928

<p><b>NOTICE NO. 2 OF 1928 : "ZENITH" CARBURETTOR TYPE 42/F.S.L. FITTED TO "CIRRUS" Mk. I. ENGINES</b></p>
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<https://www.flightglobal.com/pdfarchive/view/1928/1928%20-%200930.html?search=Ground%20Engineer>  
(No. 2 of 1928.)

"N/GE."

**NOTICE NO. 3 OF 1928 : AVRO AVIAN TYPE AIRCRAFT : BOTTOM MAIN PLANE HINGE JOINT FITTING**

AVRO Avian Bottom Main Plane Hinge Joint Fitting (Drawing No. D.979, Issue no. 1) on Fuselage

THE attention of ground engineers and all concerned is directed to the fact that cases have occurred where the above fitting has been found to be broken.

2. Ground engineers are to carry out, as a precautionary measure, frequent examination of this fitting in order to ascertain whether any cracks or signs of failure are developing.

3. Urgent action is being taken with a view to the replacement of the above by strengthened fittings of modified design and a further Notice to Ground Engineers will be issued in this connection.

Flight - The Aircraft Engineer & Airships, pg.962, 01 November 1928

<b>NOTICE NO. 4 OF 1928 : D.H.6 AIRCRAFT: ESSENTIAL MODIFICATIONS</b>
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1. The modifications described herein must be satisfactorily incorporated in all existing D.H.6 aircraft before any such aircraft is submitted for re-inspection for renewal of the certificate of airworthiness.
2. A fireproof bulkhead must be fitted to insulate the engine bay from the rest of the aircraft, and, in addition, adequate protection must be provided for the underside of the fuselage.
3. Some means must be provided to lead all waste petrol and oil clear of the fuselage.
4. No certificate of airworthiness will be issued or renewed in respect of any D.H.6 aircraft unless the above mentioned modifications have been satisfactorily incorporated.

Flight - The Aircraft Engineer & Airships, pg. 980, 08 November, 1928

<b>NOTICE NO. 5 OF 1928 : SAFETY BELTS IN AIRCRAFT</b>
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ATTENTION is drawn to the requirements of the Air Navigation Directions with regard to the provision and maintenance of safety belts in civil aircraft. . . . . 2 Paragraph 49 (1) (i) (a) of the Air Navigation Directions (A.T.M.D. 6) calls for the provision, in all flying machines, of a safety belt for each person, including the pilot, carried in an open cockpit.

3 Safety belts are regarded as part of the equipment of the aircraft, and both the belt itself and its attachment to the aircraft are therefore included in the items to be inspected and certified by a Ground Engineer licensed in category " A " in accordance with paragraphs 43 (a) and 44 (1) (a) of the Air Navigations Directions as amended by A.N.D.6A. In any case in which it is suspected that the strength of a safety belt has deteriorated, the Ground Engineer should remove the belt from the aircraft, support it by any convenient means in a manner similar to that in which it is attached in the aircraft and apply a proof load of 500 lbs. by loading the centre of the belt.

(4) "Attention is drawn to Notice to Ground Engineers No. 4 of 1920, which also deals with the question of safety belts and harness and is still operative.

Flight - The Aircraft Engineer & Airships, pg.995, 15 November 1928

**NOTICE NO. 6 OF 1928 : AVRO 504.N : ESSENTIAL MODIFICATIONS**

THE modifications described herein must be satisfactorily incorporated in all existing Avro 504 N civil aircraft before any such aircraft is submitted for re-inspection for renewal of the Certificate of Airworthiness.

2. Guard for Pilot's Feet : Modification jVo.Avro 504JV/29.

(a) In order to prevent the pilot's heels from becoming accidentally jammed between the foot board and the steel tubular diagonal frame member (Item No. 12/D.675), guards constructed of sheet aluminium are to be fitted to all Avro 504 N civil aircraft.

(6) Each guard is to be fastened to the front wooden cross member supporting the seat bearers by means of two wood screws, to the footboard by means of a series of wood screws, and to the diagonal tubular member by two clips.

(c) The arrangement is shown in Drawing No. V . 1375.

(d) The undermentioned items will be required in connection with the incorporation of this modification : see page for reference

3. Tail Skid Cables : Modification So. Avro 504 v . '43.

(a) The 10-cwt. cables are to be replaced forthwith by 20-cwt cables on those Avro 504 N aircraft fitted with compression rubber tail skid shock absorbers.

(b) This change will necessitate enlarging the hole in the shackle from  $\frac{1}{2}$  in. to  $\frac{3}{4}$  in. and fitting a correspondingly larger ferrule. Part No. 5SS351.

(c) It will be necessary to substitute the existing eyebolts anchoring the two upper cables by larger eyebolts, Part No. SS1425F.

4. Wing Skid Sockets.

(a) It has been found that on certain Avro 504N aircraft the small bolt which secures the wing skid in its front socket is incorrectly fitted in such a way that it lies parallel to the spar instead of to the chord. In this position the bolt is liable to foul the aileron pulley when the skid comes into contact with the ground.

(t) All Avro 504 N aircraft should, therefore, be examined in this respect and, if the above mentioned bolt is found to be wrongly fitted, a fresh hole should be drilled in the skid and socket to take the bolt in its correct position, i.e., lying parallel to the wing chord.

5. No Certificate of Airworthiness will be issued or renewed in respect of any Avro 504 N civil aircraft unless the above-mentioned modifications have been satisfactorily incorporated.

6. Drawings of these modifications can be obtained on application and prepayment from:

the Drawings library,

Air Ministry,

Kingsway, London

W .C.2.

Flight - The Aircraft Engineer & Airships, pg. 1026, 29 November, 1928





**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1929**

<b>NOTICE NO. 17 OF 1929 : MAINTENANCE OF COCKPITS, ETC., IN WATERTIGHT CONDITION</b>
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The attention of all ground engineers is directed to the importance of maintaining cockpits, windscreens, etc., in watertight condition so as to ensure protection of instruments and other equipment under adverse weather conditions.

Leakage of water through defective joints in cowling and windscreens may seriously impair the efficiency of the aircraft and must be prevented in order to maintain the aircraft in an airworthy condition.

Flight - The Aircraft Engineer & Airships, pg. 1062, 27 September, 1928

<b>NOTICE NO. 18 OF 1929 : AVRO "AVIAN" : BOTTOM FRONT CENTRE SECTION SPARS</b>
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The spruce bottom front centre section spar in the fuselage of "Avian" Mark III, IIIA and IV aircraft is liable to split along the line of the bolt hole\*. This member should be frequently inspected, and, at the first sign of splitting, Modification No. Avian/25, which consists of replacing the existing spruce spar by a birch multi-ply spar of identical cross-sectional dimensions, should be embodied.

(2) No Certificate of Airworthiness will be issued or renewed in respect of "Avian" Mark III, IIIA, or IV aircraft unless the above-mentioned modifications have been satisfactorily incorporated.

(3) The above information is substituted for that contained in Notice to Ground Engineers No. 11 of 1929, which is hereby cancelled.

Flight - The Aircraft Engineer & Airships, pg. 1062, 27 September, 1928

<b>NOTICE NO. 19 OF 1929 : DOPING OF CIVIL AIRCRAFT</b>
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The attention of all ground engineers is drawn to the necessity of strict compliance with paragraph 20 (g) of A.N. D. 7, which requires that operations such as doping must be carried out by methods approved by the Secretary of State.

2. The " approved " doping "schemes" (Programmes) normally require the dope to be applied in an atmosphere absolutely free from draughts and at a minimum temperature of 65° F.

3. When such conditions are not attainable, doping is not permissible unless recourse is had to special " approved " doping "schemes" (Programmes) which cater for wider ranges of temperature and humidity,

The manufacturer concerned issues full instructions as to the manner and conditions of application, and such instructions must be strictly adhered to.

4. All instructions for the application of " approved " doping "schemes" (Programmes) bear a reference to the approval authority. (

Flight - The Aircraft Engineer & Airships, pg. 1062, 27 September, 1928

<b>NOTICE NO. 1 OF 1929 : MODIFICATIONS TO AIRCRAFT AND / OR ENGINES</b>
--

subsequent to the issue of certificates of airworthiness

THE attention of Ground Engineers is directed to the revised regulations with regard to "modifications" to aircraft, as laid down in the Air Navigation Directions 1928 (A.N.D. 7).

2. Para. 35(1) of these directions requires that the approval of the Secretary of State shall be obtained for any modifications which affect the safety of an aircraft in respect of which a Certificate of Airworthiness is in force

3. Para. 57 requires the inspection and certification in the appropriate log book of such modifications by a qualified ground engineer or by an authorised representative of an approved firm.

4. Ground Engineers must, before inspecting and certifying modifications, ensure that design approval has been obtained, and must include a reference to the authority received in the log book entry.

Flight - The Aircraft Engineer & Airships, pg. 55, 17 January, 1929

<b>NOTICE NO. 2 OF 1929 : TIGHTENING CYLINDER HEAD HOLDING DOWN STUDS</b>
---

THE attention of all ground engineers is directed to the importance of avoiding overtightening the nuts on studs and bolts subjected to pulsating load, e.g., cylinder holding down studs, connecting rod bolts, etc.

2. Particular attention is necessary on engines where the cylinders and, or heads are retained by long external studs, it being essential in all such cases that due allowance is made when tightening the nuts, for the increased tension on the studs which will arise when the engine is heated.

3. No attempt should be made to remedy a leaky joint between a cylinder and cylinder head on such engines by overtightening the nuts as this will invariably lead to the parts being subjected to excessive loads and distortion. All such leaks should be rectified by attention to the joint itself.

Flight - The Aircraft Engineer & Airships, pg. 55, 17 January, 1929

**NOTICE NO. 3 OF 1929 : AVRO AVIAN AIRCRAFT : MODIFICATION TO BOTTOM REAR HINGE JOINT**

THE modification described herein must be embodied on all existing "Avian" aircraft fitted with retractable undercarriage to Drg. Xo. K. 974/3 before any such aircraft is submitted for re-inspection for renewal of the Certificate of Airworthiness. Ground engineers should therefore ensure that all such aircraft for which they are responsible have this modification embodied

This requirement is applicable to "Avian" aircraft of the following types : Avian Mark I, Avian Mark II, Avian Mark III, Avian Mark IIIA.

2. The modification consists of sawing off the existing lug on the bottom centre section spar and replacing this by the part shown on sketch No. 2814, dated June 22, 1928. . . . • . .

3 attention is drawn to the necessity for inspection, before each flight, of the bottom rear hinge joint for any indication of fracture between the roll and the plate until the modification is incorporated.

4. No Certificate of Airworthiness will be issued or renewed in respect of "Avian" aircraft fitted with retractable undercarriage unless the above modification has been embodied.

5. Cancellation.—Notice to ground engineers No. 3 of 1928 is hereby cancelled. (No. 3 of 1929) Flight - The Aircraft Engineer & Airships, pg. 55, 17 January, 1929

<b>NOTICE NO. 5 OF 1929 : INDEX OF NOTICES TO GROUND ENGINEERS : 1920 - 1928</b>
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THE New Index has now been published (by AIR MINISTRY) giving:

- (1) the Cancelled Notices;
- (2) Operative Notices ;
- (3) Amendments.

Any communications relating to this should be addressed to:

The Secretary (C.A.2),  
Air Ministry,  
Kingsway, London,  
W.C.2.

Flight - The Aircraft Engineer & Airships, pg. 110, 07 February, 1929

<b>NOTICE NO. 14 OF 1929 : FORMATION OF BUBBLES IN AIRCRAFT COMPASSES</b>
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In view of the fact that trouble has recently been experienced through the formation of bubbles in liquid compasses installed in Service and Civil aircraft, the attention of all concerned is directed to the following report on this subject:

1. The presence of a bubble in a liquid compass renders the liquid liable to disturbance whenever the movement of the aircraft changes in any way. These movements of the liquid affect the magnet system and usually render the compass completely unreliable. For this reason it is essential that aircraft compasses should be constructed so that they will remain free from bubbles under all normal flying conditions.

2. The formation of bubbles may be due to any of the following causes:

- (a) Leaking at one or more places where joints have been made, e.g., filling plug, verge ring, expansion chamber.
- (b) Expansion chambers which are too small or too stiff to cope with the temperature range experienced.
- (c) Inadequate de-aeration of the compass liquid before the bowl is finally sealed up

3. Attention is particularly drawn to 2 (c) above, owing to the fact that alcohol normally holds in solution a considerable volume of air, and, if the pressure on the liquid is gradually decreased, some of this air will be liberated and will form a bubble. Such conditions occur when aircraft climb high altitudes where the air pressure is low. Aircraft compasses should, therefore be guaranteed by their makers to be free from bubbles if placed in a chamber in which the air pressure is reduced to 3 lbs. to the sq. in."

(Notice to Airmen No. 45 of 1929) Use No.14 Notice to Ground Engineer. Flight - The Aircraft Engineer & Airships, pg. 908, 22 August, 1929



<b>NOTICE NO.13 OF 1929 : CORROSION UNDER BRASS IDENTIFICATION CLIPS : STREAMLINE WIRES AND TIE-RODS</b>
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The attention of all ground engineers is directed to the fact that corrosion is found to take place under the brass identification clips of streamlined wires and tie-rods.

(2) These parts, therefore, should be immediately examined by moving the clips from their position and, should corrosion be found, the wire or rod must be replaced.

(3) Where frequent examinations are difficult, e.g., within covered components, the wires and rods may be protected under the clips by a coating of good varnish, care being taken not to damage this protective coating when replacing the clips in their final position. If the clips are a slack fit, they should be lightly closed to prevent their sliding on to the unprotected parts of wires or rods.

(4) To prevent the above mentioned corrosion, new materials introduced for the clips on wires and rods of future manufacture.

Flight - The Aircraft Engineer & Airships, pg. 908, 22 August, 1929

**NOTICE NO. 23 OF 1929 : SAFETY BELTS AND SAFETY HARNESS**

THE attention of ground engineers and all concerned is drawn to fact that the requirements of Design Leaflet E.3 of Air Publication 1208 will be brought into effect in respect of all applications for Certificates of Airworthiness as follows:—

- (i) Applications for type Certificates of Airworthiness after November 1, 1929.
- (ii) Applications for subsequent Certificates after February 1, 1930.
- (iii) Applications for renewals of Certificates of Airworthiness, so far as the requirements can be satisfied after February 1, 1930.

2. The requirements of Design Leaflet E.3 of Air Publication 1208 are as follow:—

Strength Requirements for Safety Belts and Safety Harness for Civil Aircraft.

(i) Only belts or harness of approved types may be used. Approval of a type will be notified by an addition to Leaflet E.I of Air Publication 1208, and will be obtained by submitting a sample belt or harness to the following tests:—

(a) Two-piece Belts

The complete belt, straightened out, is to be tested under tension until it fails, and must stand a load of not less than 1,100 lb. before failure occurs.

(b) Four-piece Harness

The shoulder straps of the completely assembled belt shall be attached to a cross bar at points 12 in. apart. The thigh straps shall be attached to a cross bar in a similar manner. Load shall be applied to the cross bars at points midway between the attachments of the straps and in such a manner as to extend the belt in the form of an X, all load passing through the release pin.

The harness must be loaded in this manner until it fails, and must support a total load of not less than 1,100 lb. before failure occurs.

(c) The belt or harness must be fitted with a release device that will function satisfactorily under a load of 250 lb. with the belt or harness arranged as specified in (a) and (b). This test is to be repeated three times.

(ii) Each and every belt or harness must be proof loaded by applying a total load of 300 lb. in the manner described at (i) (a) and (b) above, for two-piece belts and four-piece harnesses respectively. As a result of this test no sign of failure or deformation must be apparent.

(iii) Two-piece belts must be at least 4 in. wide, and capable of adjustment in order to prevent slipping downwards from the chest to the abdomen. The positions of the points of attachment must be such that the belt can be worn comfortably over the chest by an average person.

(iv) All end attachments and fittings used in conjunction with belts and harness, together with those parts of the aircraft to which the belt loads are transmitted, must be capable of withstanding the load arising from the belt load mentioned in paragraph 1 above. The distribution of the total load between the various points of attachment, if more than one, will depend upon the design of the belt or harness, and must, therefore, be considered separately for each type of belt or harness and each type of aircraft.

(v) Three-piece harness, i.e., harness with only one leg strap passing between the wearer's legs, will not be approved for use in civil aircraft.

(vi) The use of leather as a material for safety belts and safety harness is prohibited.

Flight - The Aircraft Engineer & Airships, pg. 1293, 06 December, 1929

<b>NOTICE NO. 24 OF 1929 : ADVERTISING STREAMERS AND BANNERS ON AIRCRAFT</b>
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THE attention of Ground Engineers and all concerned who contemplate attaching streamers or advertising banners to aircraft is drawn to the fact that the attachment of such banners is considered to be a modification which affects the safety of the aircraft.

No such banner shall be fitted until approval has been given as required by Paragraph 35 of the Air Navigation Directions, 1928 (A.N.D.7).

(No. 24 of 1929.) Flight - The Aircraft Engineer & Airships, pg. 1293, 06 December, 1929

<b>NOTICE NO. 25 OF 1929 : EFFECTS OF TIMBER SHRINKAGE</b>
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THE attention of all Ground Engineers is directed to the importance of maintaining as tight as possible without damage or distortion of the wood, all bolts which, in passing through wooden members, are connected by metal plates embedded in or on the face of the timber, as, in the case of fittings of this type, timber shrinkage may cause slackening of the bolt. Frequent examination is therefore essential, and, in the case of important fittings such as main spar joints, this examination must be made at least twice a year.

2. In cases such as the above, timber shrinkage may also cause cracks in the neighbourhood of the bolt holes. If the bolts are situated within a short distance of the extremity of the wooden member and the cracks are small and occur only between the bolts and the end, their presence need not normally be considered serious. If, however, the cracks pass through the bolt holes into the main body of the member, there is danger of the strength of the member being seriously reduced, and its reinforcement or replacement in an approved manner becomes essential.

3. The ends of spars must, therefore, be frequently examined, and when cracking is discovered, the wing must be opened up and the spar examined to see how far the cracks extend.

(No. 25 of 1929.) Flight - The Aircraft Engineer & Airships, pg. 1293, 06 December, 1929

**NOTICE NO. 7 OF 1929 : MAINTENANCE OF AIRCRAFT AND ENGINE : LOG BOOKS**

GROUND Engineers responsible for the inspection of British aircraft that are used for private flying only (i.e., not flown for carrying passengers or goods for hire or reward\*) are strongly recommended to take action to ensure that a complete record of the inspection by competent persons of all repairs and overhauls is maintained, preferably in aircraft and engine log books.

This record is particularly valuable when the aircraft has to be examined for renewal of its certificate of airworthiness. It will not only facilitate consideration of the owner's application for renewal, but will obviate the difficulties and consequential delay which are likely to arise when particulars of repairs and overhauls have to be obtained from the firms who have carried out such work since the aircraft was last examined.

The aircraft logbook (C.A. Form 27) and engine log book (C.A. Form 28) can be purchased from H.M. Stationery Office, either directly or through any bookseller, at a cost of 2s. 6d. each (exclusive of postage).

Refills for either book can similarly be purchased at a cost of 1s. 3d. each (exclusive of postage),

\*Note—Aircraft and engine logbooks are required to be kept for all aircraft intended or used for carrying passengers or goods for hire or reward.

Regulation referenced : para. 1 (b) of Schedule III to the Air Navigation (Consolidation) Order 1923.

Flight - The Aircraft Engineer & Airships, pg. 250, 21 March, 1929

Maintenance of Aircraft and Engine Log Books OWNERS of British aircraft that are used for private flying only {i.e., not flown for carrying passengers or goods for hire or reward\*) are strongly recommended in their own interests to maintain aircraft and engine log books so as to have available at all times a complete record of repairs and overhauls.

This record is particularly valuable when the aircraft has to be examined for renewal of its certificate of airworthiness. It will not only facilitate consideration of the owner's application for renewal but will obviate the difficulties and consequential delay which are likely to arise when particulars of repairs and overhauls have to be obtained from the firms who have carried out such work since the aircraft was last examined. The aircraft log book (C.A. Form 27) and engine log book (C.A. Form 28) can be purchased from H.M. Stationery Office, either directly or through any bookseller, at a cost of 2s. 6d. each (exclusive of postage).

Refills for either book can similarly be purchased at a cost of 1s. 3d. each (exclusive of postage).

\* Note.—Aircraft and engine log books are required to be kept for all aircraft intended or used for carrying passengers or goods for hire or reward.

See para. 1 (ft) of Schedule III to the Air Navigation (Consolidation) Order. 1923

(Air Ministry Notice to Aircraft Owners No. 15 of 1929.)

<b>NOTICE NO. 22 OF 1929 : D.H. 60 AIRCRAFT : RETAINING WASHER, PART NO. H. 16132, FOR AILERON KING POST BALL JOINT</b>
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ATTENTION is drawn to the above-mentioned washer, Part No. H.16132 on D.H.60 type machines . Owing to this washer having been reversed OD one of the above aircraft, a failure at the shank of the rear end of the aileron gear connecting rod, Part No. H.I 1801, has resulted.

Ground engineers should, therefore, make a special examination of this washer on all machines of the above type under their supervision. (No. 22 of 1929) Flight - The Aircraft Engineer & Airships, pg. 1268, 29 November, 1929

<b>NOTICE NO. 7 OF 1930 : "MOTH" AIRCRAFT D.H.60, 60X, G, AND M</b>
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It has been found that there is inadequate clearance between the washer, part No. H. 16132, and the rear ball race in the aileron connecting rod on aircraft of the above types. It is, therefore, desirable to incorporate the modification described in para. 3 below.

2. This modification must be incorporated before the next renewal of Certificate of Airworthiness. If, however, on examination, the washer, part No. h.16132, is found to be badly cracked, the modification should be incorporated at once and, in the case of slightly bent washers, at the earliest convenient opportunity.

3. The washers, part No. H.16132, should be removed and the connecting rod disconnected at its rearend. The studs, part No. H.11263, in the aileron lever should then be refitted on the inboard side of the lever as shown on drawing No. M.1308, this being most easily accomplished by changing

•ver the left- and right-hand aileron levers complete. New washers, part No. H.16132, modified (see drawing No. M. 1308) or part No. H.31185, must be fitted.

4. The above-mentioned drawing and new washers may be obtained from the De Havilland Aircraft Co., Ltd., Stag Lane Aerodrome, Edgware.

5. Cancellation.—Notice to Ground Engineers No. 22 of 1929 is hereby cancelled.

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1930**

<b>NOTICE NO. 18 OF 1930. : EXAMINATION OF APPLICANTS FOR GROUND ENGINEER'S LICENCES</b>
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EXAMINATION boards will sit for the purpose of examining applicants for ground engineers' licences at the following times and places:—

2. Applications for licences should be made on the appropriate form, which is obtainable on request, and should be addressed to:  
The Secretary,  
Air Ministry (D.C.A.),  
Gwydyr House,  
Whitehall, London.

Applications for extensions to existing licences will also be dealt with at these boards, and such applications should be sent either by letter or on the usual application form to the address given above.

3. Applications for examination at the centres named at 1 (c), (d) and (c) above, can only be accepted provided that the application is received 14 days before the dates specified and provided also that the total number of applications received are within the capacity of the board.

Applicants whose applications are not accepted owing to these provisions will be given the opportunity for early examination at London or Croydon, or, alternatively, to be placed on a waiting list for the next board to be arranged in the particular place concerned

Flight - The Aircraft Engineer & Airships, pg. 1388, 28 November, 1930



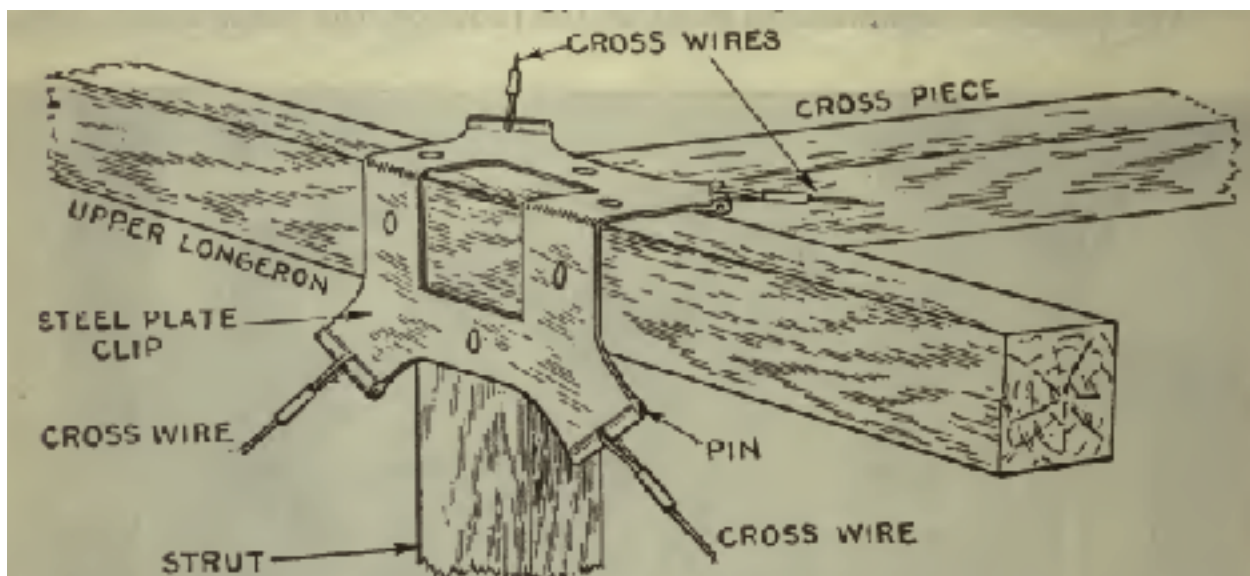
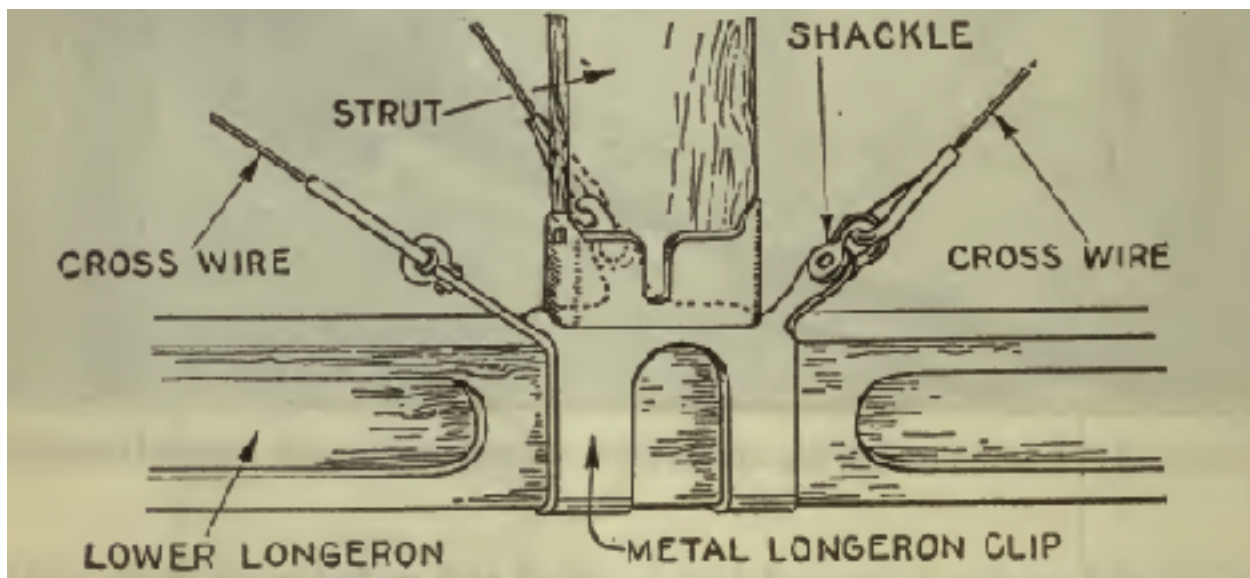
<b>BLACKBURN " BLUEBIRD " MARK IV AIRCRAFT :</b>
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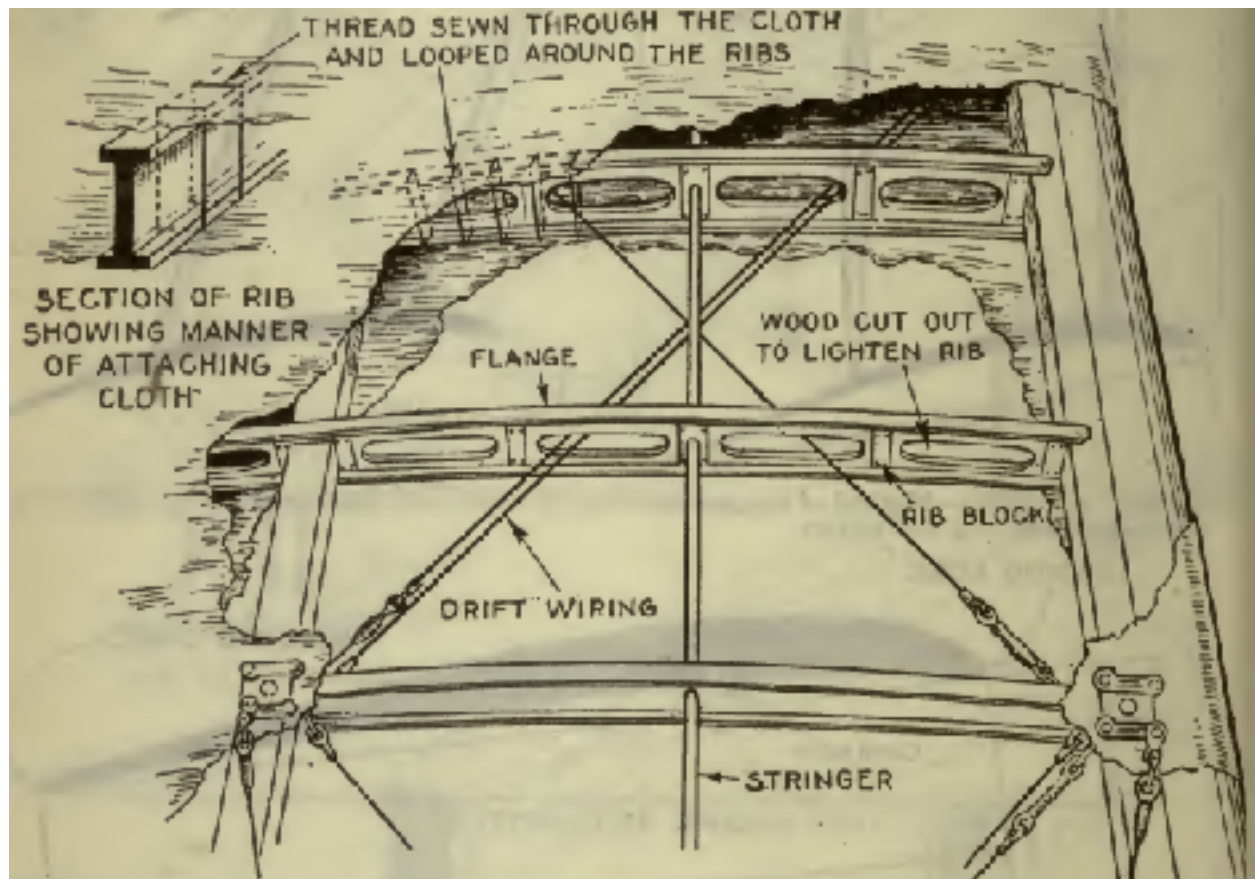
**Pins in Connecting Rod between Control Sticks for Aileron Control**

1. THE attention of aircraft owners and ground engineers is drawn to the above-mentioned pins, which are not to exceed 0-470-in. in length under the head.
  2. The connecting rod, housed within the elevator rockshaft, is attached to the control sticks by  $\frac{1}{8}$  in. diameter pins and to the ailerons connecting rod by a  $\frac{1}{4}$  in. diameter pin. The pins are opposite flattened rivet heads inside the rockshaft tube, providing a fine internal clearance. Aircraft owners and ground engineers should examine this component part to ensure that pins of the correct length are fitted and that adequate clearance is provided in all positions of the control stick. "
  3. The modification is shown on Saunders-Roe, Ltd., drawings Nos. W.A.1502/4 and 1603/5, copies of which can be obtained upon application to Messrs. Saunders-Roe, Ltd., East Cowes, I.O.W.
- The appropriate part numbers for pins of the correct length are :—
- Part 8, Drg. No. N.A.1603/5 ;
- Part 4, Drg. No. N.A.1502/4 ; Part No. 383/51
- (No. 8 of 1930) Flight - The Aircraft Engineer & Airships, pg.138, 17 January, 1930

**INSPECTION TABS ON CONTROL AND BRACING CABLES**

1. IN the case of all aircraft fitted with inspection tabs in the eyes of splices of control or bracing cables, the following action should be taken.
2. Movement of the inspection tabs, and consequent chafing of the thimble and/or cable, must be prevented by securing the tabs alongside the turn- buckle or cable by wire or other suitable means.
3. Examination shall be made of all tabbed cable eyes, special attention being directed to cables which normally are hidden, and any loose tabs must be secured as indicated above.
4. Cancellation.—Notice to Ground Engineers, No. 1 of 1927, is hereby cancelled.  
(iVo. 9 of 1930.) Flight - The Aircraft Engineer & Airships, pg.138, 17 January, 1930





**PROVISION OF FIREPROOF BULKHEADS : TEMPORARY RELAXATION OF AIR-WORTHINESS  
REQUIREMENTS FOR CERTAIN AIRCRAFT**

1. It has been decided that aircraft fitted with rotary engines which are not provided with a fireproof bulkhead to insulate the engine from the rest of the aircraft may, notwithstanding the requirements specified in Leaflet D. 2 of the Airworthiness Handbook for Civil Aircraft (A.P. 1208), be granted a certificate of airworthiness, if the aircraft otherwise complies with airworthiness requirements, and is recommended for the issue of a certificate of airworthiness within six months from the date of this notification.

2. Similarly, aircraft of this description in respect of which certificates of airworthiness have been or shall have been issued, but which do not conform to airworthiness requirements in this respect, may, if the other requirements of airworthiness are met, be granted renewals of such certificates of airworthiness at any time up to two years from the date of this notification.

3. In each of the above cases the requirement in question will be rigidly enforced after the expiration of the period indicated.

NOTE.—In order to draw the special attention of aircraft owners to the information contained in the Notices hitherto known as "Notices to Ground Engineers," this series of Notices will, in future, be entitled "Notices to Aircraft Owners and Ground Engineers." (No. 26 of 1929.)

Top Front Spar Outer Joint on "Moth Aircraft" >vltH Slotted Winfis (D.H.60.X., G., and N.).

1. On aircraft of the above types the inner J in E.S.F. bolt at the top front spar outer joint should be replaced by a ^\ in. B.S.F. bolt, in accordance with Drawing No. N.1193, copies of which may be obtained from Messrs. De Havilland Aircraft Co., Ltd., Stag Lane Aerodrome, Edgware, Middlesex.

2. Certificates of Airworthiness for this type will not be renewed unless this modification has been incorporated. (No. 27 of 1929.) Flight - The Aircraft Engineer & Airships, pg.138, 17 January, 1930

<b>MANUFACTURE AND INSPECTION OF AIRCRAFT PARTS TO DRAWINGS</b>
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- (1) THE attention of aircraft owners and ground engineers is drawn to the fact that cases have occurred where defective parts have been replaced by parts manufactured without reference to drawings, the defective part being used as a pattern.
- (2) It is pointed out that in such circumstances there is considerable risk of the new part being made of incorrect materials and/or to incorrect dimensions.
- (3) In every case where it is necessary to manufacture any detail or component of an aircraft for which a Certificate of Airworthiness has been issued or is to be issued or renewed, such replacements must be manufactured and inspected to approved drawings.
- (4) Certification of any repair affecting the safety of an aircraft under paragraph 57, sub-section 2, of the Air Navigation Directions, 1928 (A.N.D.7) should not be made unless either :—
- (a) The replacement part has been approved by the makers of the aircraft; (b) The part has been manufactured and inspected to standard approved drawings (approved repair "schemes" (Programmes) issued by certain makers coming under this head) ; or
- (f) The repair has been approved as a " modification subsequent to the issue of a Certificate of Airworthiness " under the procedure described in paragraph 35 of A.N.D. 7. (No. 1 of 1930.) Flight - The Aircraft Engineer & Airships, pg.138, 17 January, 1930

**GROUND ENGINEERS LICENSED IN CATEGORIES "A" AND "C" : DISTINCTION BETWEEN DUTIES**

1. THE Air Navigation Directions, 1928 (A.N.D. 7) stipulate that the certification of an aircraft, in accordance with paragraph 8 of Schedule II of the Air Navigation Order, shall be made, in respect of the aircraft itself by a ground engineer licensed in category " A," and in respect of the engines and engine installations, by a ground engineer licensed in category " C."<sup>357</sup>

2. When a certificate of safety for flight for any aircraft in respect of both. aircraft and engine(s) is given by one ground engineer licensed in both " A " and " C " categories no question arises in respect of the responsibility incident to one or other of the duties concerned. The question of the limits of responsibility does arise, however, when the certification is made by two separate individuals licensed in the separate categories.

3. In order that there shall be no doubt regarding the distinction between these duties, the following instructions are promulgated :—

(a) The inspection to be performed by the ground engineer licensed in category " A " includes :—

(i) the whole of the aircraft structure (including fuselage or hull, wings, ailerons, slots, tail-plane, elevators, fins, rudder, undercarriage, struts, bracings, and airscrew) for condition and correct assembly;

(ii) all flying"controls for assembly and correct functioning;

(iii) the flying instruments (aneroid, airspeed indicator, turn indicator and compass, where applicable) for installation and correct functioning ; (iv) aircraft equipment (safety belts and electrical services with, their batteries, wiring and bonding for W/T) for correct installation.

(6) The inspection to be performed by the ground engineer licensed is category " C " includes :—

(i) the whole of the engine installations, including the engine with its accessories and the fuel, oil, cooling, ignition and exhaust systems for condition, installation, correct functioning, and power output;

(ii) all controls connected with the engine and its ancillary systems for assembly and correct functioning;

(iii) the instruments relating to the engine and its installation (revolution indicator, pressure and contents gauges, and temperature indicator)' for installation and correct functioning;

(iv) the airscrew for correct attachment and smoothness of running.

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<sup>357</sup> (No. 25 of 1930.) Flight - The Aircraft Engineer & Airships, pg. 905, 08 August, 1930

**DISCONTINUOUS ELEVATORS : COVERING OF WOODEN AIRSCREWS : FIREPROOF BULKHEADS :  
PROTECTION OF DUAL CONTROLS**

The attention of all aircraft owners and ground engineers is drawn to the fact that the following requirements of Air Publication 1208 will be brought into effect in respect of all applications for Certificates of Airworthiness as follows :

- (i) In respect of all applications for type Certificates of Airworthiness as given at (a).
- (ii) In respect of all applications for subsequent Certificates of Airworthiness as given at (6).

**A. Discontinuous Elevators**

J. The requirement of the additional sub-paragraph of paragraph I, of Design Leaflet B.4 is as follows :—"

Discontinuous Elevators.—The use of elevators in the same plane divided into separate sections which are not positively and rigidly coupled together is prohibited on aircraft in the acrobatic category."

2 The above requirement will be brought into effect as follows :— (a) As from July 17, 1930.

(b) and (c) As from October 17, 1930.

**B. Covering of Wooden Airscrews**

1. The requirement of paragraph VI of Design Leaflet B.8 is as follows :— "Covering.—The surface of wooden airscrews must be protected by varnish, varnished fabric, cellulose lacquer, or any other approved protective."

2 The above requirement will be brought into effect as follows :—(a), (fc) and [c] As from July 17, 1930.

**C. Fireproof Bulkheads**

1. The requirement of sub-paragraph (i) paragraph I of Design Leaflet

G.I is as follows :—" (i) A fireproof bulkhead possessing at least equivalent fire-resisting qualities to the following must be fitted in order to insulate the engine bay from the rest of the aircraft :—A sandwich consisting of best quality asbestos millboard of a minimum thickness of 3/32 in., held between aluminium or duralumin sheets, 24 S.W.G. thick, securely riveted together. In addition, adequate protection must be provided for the underside of the fuselage."

2. The above requirement will be brought into effect as follows :—(a) As from July 17, 1930. (6) and (c) As from October 17, 1930.

3. N.B.—The special concessions regarding the fitting of fireproof bulkheads to aircraft with rotary engines, granted by Notice to Aircraft Owners and Ground Engineers No. 26 of 1929, still remain in force.

**D. Protection of Dual Controls**

1. The requirement of sub-paragraph (ii) of paragraph I of Design Leaflet

B.6 is as follows :—" (ii) Adequate provision must be made to prevent the likelihood of the passenger(s) interfering with any of the controls of dual control aircraft when being used for other than training purposes."

2. The above requirement will be brought into effect as follows :—(a) As from October 17, 1930. (fc) and (c) As from January 17, 1931.

(No. 24 of 1930.) Flight - The Aircraft Engineer & Airships, pg. 905, 08 August, 1930

<b>FIREPROOFING OF SMOKING COMPARTMENTS</b>
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1. THE attention of aircraft owners and ground engineers is drawn to the fact that the requirements of para. 6 Design Leaflet G 1 of Air Publication 1208 will be brought into effect in respect of all applications for Certificates of Airworthiness (i.e., applications for Type Certificates, applications for subsequent Certificates and applications for renewals of Certificates) as from the date of issue of this Notice.

2. The requirements of para. 6 Design Leaflet G.I of Air Publication 1208 are as follows :—

" Smoking compartments."\*—In every compartment in which smoking is Permitted, the furnishings, hangings, lagging and insulation shall, unless made of non-inflammable materials, be fireproofed in an approved manner. (No. 27 0/1930).

\*For further information regarding smoking in aircraft see Statutory Rules and Orders, 1923, No. 1508 (as amended by 1925, No. 1260, etc.), article 9 (iii).

page 1031, 12 sept 1930



**NAPIER "LION" ENGINE : TIGHTENING OF NUTS ON MASTER CONNECTING RODS**

1. THE attention of aircraft owners and ground engineers is directed to the special care necessary when tightening the nuts on master connecting rod studs of Napier " Lion " engines.
- 2- These nuts must be sufficiently tight to hold the bearing cap securely under running conditions, but not so tight as to cause stretching of the studs To ensure this correct tension the engine makers employ a spring loaded spanner set to give a maximum loading of 840 in./lb. (120 lb. at 7-in. radius).
3. It is very desirable to use a spanner such.as that referred to in paragraph 2, but when this is not available, a box spanner and a tommy bar, the latter to be 7 1/2 in. in length, can be used. The nuts must be tightened by applying a steady pressure to the spanner.
4. If any correction is necessary in order to obtain alignment between the split pin hole in the stud and the castellation of the nut, this must be effected by removing the nut and facing off the bottom face, care being taken that a true surface is obtained between this face of the nut and the bearing cap.
5. Studs for the " Lion " master connecting rod are now made from steel to B.E.S.A. Specification S/65. When any replacements are necessary, studs of this material, which are identifiable by a saw cut across the end, should be used.
6. Attention is drawn, in connection with the above, to Notices to Ground Engineers Nos.3 of the year 1927, and 2 of the year 1929.
7. Cancellation.—Notice to Aircraft Owners and Ground Engineers No. 14 of the year 1930 is hereby cancelled. (No. 28 of 1930.) **page 1031, 12 sept 1930**

<b>COMPASSES FOR CIVIL AIRCRAFT</b>
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1. TYPES of compasses approved for use in civil aircraft are shown in Table III of Design Leaflet E.I of the Airworthiness Handbook for Civil Aircraft (A.P. 1208).
2. Notice to Aircraft Owners and Ground Engineers No. 14 of 1929 requires certain guarantees from compass manufacturers in connection with the question of freedom from bubble formation.
3. In order that all concerned may know when the requirements have been complied with, arrangements have been made with compass manufacturers whereby each compass will be accompanied by a " Guarantee,"
4. This guarantee will state that the compass has been inspected, that it complies with the appropriate specification and with the requirements of the Air Navigation Directions, and that it has passed a de-aeration test. All such guarantees will bear an Air Ministry Reference Number as evidence of validity.  
(No. 29 of 1930.)

<b>SLACKNESS IN THE OPERATING MECHANISM OF FLYING CONTROLS</b>
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1. THEattention of aircraft owners, ground engineers and all concerned is drawn to the fact that slackness in the operating mechanism of flying controls may, under certain circumstances, give rise to flutter either of the wing-aileron system or of the tail unit.
2. Frequent examination of control systems should be made, and immediate steps taken to remedy slackness when found. (No. 30 of 1930.) **page 1031, 12 sept 1930**

<b>BLACKBURN "BLUEBIRD," MARK IV AIRCRAFT: OLEO LEG ATTACHMENT TO FUSELAGE</b>
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1. THE attention of Aircraft Owners and Ground Engineers is drawn to Modifications Nos. 71 and 72, Attachment Bolts for Oleo Legs to Fuselage, Parts Nos. N.A. 124, Issue 3, and N.A. 7019, Issue 3, are now both provided with lubricators to obviate possible seizure in the trunnion blocks, PartNo. N.A. 7207.
2. Any existing bolts which show signs of wear, which are bent or which are not provided with lubricators, are to be replaced immediately by bolts to the preceding Part Nos.obtainable from Messrs. Saunders-Roe, Ltd., East Cowes
3. The fuselage fabric at the point of attachment of the oleo legs must clearly expose  
xposethelubricatortofacilitateapplicationofthegreasegu
4. No Certificate of Airworthiness will be renewed until this modification has been satisfactorily incorporated.  
(No. 31 of 1930.) Pg 1055 19 September, 1030

**NO. 6 OF 1930 : SAFETY BELTS AND SAFETY HARNESS**

1. THE attention of aircraft owners, ground engineers and all concerned is drawn to the requirements of the Air Navigation Directions with regard to the provision and maintenance of safety belts in civil aircraft. These are as follow :—

(i) Paragraph 60 (1) (i) (a) of the Air Navigation Directions 1928 (A.N.D., No. 7), calls for the provision, in all flying machines, of a safety belt for each person, including the pilot, carried in an open cockpit.

Safety belts are regarded as part of the equipment of the aircraft, and both the belt itself and its attachment to the aircraft are, therefore, included in the items to be inspected and certified by a ground engineer licensed in Category "A," in accordance with paragraphs S3 (a) and 54 (a) of the Air Navigation Directions (A.N.D. 7).

In any case in which it is suspected that the strength of a safety belt has deteriorated, the ground engineer should remove the belt from the aircraft, support it by any convenient means in a manner similar to that in which it is attached in the aircraft, and apply a proof load of 300 lb. by loading the centre of the belt.

(iii) Where ropes are used for attaching the belts to the aircraft, the strength of the rope should be approximately 14 cwt. "Lapped" joints in ropes are considered unsatisfactory and the use of ropes which allow of a spliced or "whipped" joint is more satisfactory. In all cases of "whipping," good quality kite cord should be used, and in order to minimise the slip when the rope is subjected to subsequent strain, the "whipping" should be carried out while the joint is under tension. All loose ends of ropes should be "Served" to prevent fraying, and in no case should a rope be connected directly to a plate where chafing may occur.

(iv) Anchorage plates, where secured by bolts, should be so arranged that the shear is taken at the bolt head rather than the screwed end, as cases have arisen where the plates bearing on the screwed end have sheared the bolt. The minimum diameter of any bolt used in anchorage fittings should be 2.B.A. The fixing of an anchorage plate or connection to the middle of a structural member should be avoided, and the belt be so arranged as to sustain the upper part of the body.

(v) The release gear on the belt should always be correctly positioned for easy manipulation, and should be maintained in a lubricated condition.

2. The attention of all concerned is also drawn to the fact that the requirements of Design Leaflet E.3 of Air Publication 1208 have been brought into effect in respect of all applications for Certificates of Airworthiness, as follows :

(i) Applications for type Certificates of Airworthiness after November 1, 1929.

(ii) Applications for subsequent Certificates after February 1, 1930.

(iii) Applications for renewals of Certificates of Airworthiness, so far as the requirements can be satisfied, after February 1, 1930.

3. The requirements of Design Leaflet E.3, of Air Publication 1208, are as follow •:—

**STRENGTH REQUIREMENTS FOR SAFETY BELTS AND SAFETY HARNESS FOR CIVIL AIRCRAFT.**

(i) Only belts or harness of approved types may be used. Approval of a type will be notified by an addition to Leaflet E.I of Air Publication 1208, and will be obtained by submitting a sample belt or harness to the following tests :—

(a) Two-piece Belts

The complete belt, straightened out, is to be tested under tension until it fails, and must stand a load of not less than 1,100 lb. before failure occurs.

(b) Four-piece Harness

The shoulder straps of the completely assembled belt shall be attached to a cross bar at points 12 in. apart. The thigh straps shall be attached to a cross bar in a similar manner. Load shall be applied to the cross bars at points midway between the attachments of the straps and in such a manner as to extend the belt in the form of an X, all load passing through the release pin.

The harness must be loaded in this manner until it fails, and must support a total load of not less than 1,100 lb. before failure occurs. c) The belt or harness must be fitted with a release device that will function satisfactorily

## Notes on "Civil Aviation"

under a load of 250 lb. with the belt or harness arranged as specified in (a) and (6). This test is to be repeated three times.

(ii) Each and every belt or harness must be proof loaded by applying a total load of 300 lb. in the manner described at (i) [a) and (i) (6) above, for two-piece belts and four-piece harnesses respectively. As a result of this test no sign of failure or deformation must be apparent.

(iii) Two-piece belts must be at least 4 in. wide, and capable of adjustment in order to prevent slipping downwards from the chest to the abdomen. The position of the points of attachment must be such that the belt can be worn comfortably over the chest by an average person.

(iv) All end attachments and fittings used in conjunction with belts and harness, together with those parts of the aircraft to which the belt loads are transmitted, must be capable of withstanding the load arising from the belt load mentioned in paragraph (i) above. The distribution of the total load between the various points of attachment, if more than on?, will depend upon the design of the belt or harness, and must, therefore, be considered separately for each type of belt or harness and each type of aircraft.

(v) Three-piece harness, i.e., harness with only one leg strap passing between the wearer's legs, will not be approved for use in civil aircraft.

(vi) The use of leather as a material for safety belts and safety harness is prohibited.

4. Cancellation.—Notices to Ground Engineers Nos. 4 of 1920, 5 of 1928 and 23 of 1929, are hereby cancelled. (No. 6 of 1930)

**NO. 37 OF 1930 : PROVISION OF SAFETY BELTS OR HARNESS IN CLOSED COCKPIT AIRCRAFT**

SAFETY belts or harness of an approved type must be provided for the pilot's seat in all closed cockpit or cabin type heavier-than-air aircraft. The installation of the safety belt or harness must satisfy the requirements of paragraph 4 of Design Leaflet E.3 of Air Publication 1208, Airworthiness Handbook for Civil Aircraft.

2. The above requirement will, in due course, be introduced into Section VII of the current Air Navigation Directions.

3. It will be brought into effect as follows :—

- (a) On January 1, 1931, in the case of aircraft in respect of which original Certificates of Airworthiness are issued on or after that date.
- (b) From January 1, 1931, in the case of aircraft in respect of which application is made on or after that date for renewal of an existing Certificate of Airworthiness.

NOTE.—For safety belt and harness requirements in connection with open cockpit aircraft, see Notice to Aircraft Owners and Ground Engineers No. 6 of 1930.

(No. 37 0/1930.) Flight - The Aircraft Engineer & Airships, pg. 1388, 28 November, 1930

<b>No. 38 of 1930 : HEATING SYSTEMS OF COCKPITS AND CABINS</b>
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1. THE attention of aircraft owners, ground engineers and all concerned is drawn to the fact that heating systems which depend on jacketted exhaust pipes m a y , under certain circumstances, develop leaks which will enable exhaust gases containing carbon monoxide to enter the cabin or cockpit.
  2. Frequent examination of the exhaust pipes concerned should be made, particularly of the portions within the jacket or muff, to ensure that they are adequately gas-tight.
- (No. 38 o 1930.) Flight - The Aircraft Engineer & Airships, pg. 1388, 28 November, 1930



**No. 39 of 1930 : D.H. 80.A." PUSS MOTH " AIRCRAFT : RUDDER CONTROL LEVER**

1. ONcertain aircraft of the above types, the rudder control lever, part No. H.30300A situated immediately behind the cabin, has been found to be below strength, and trouble may be experienced, particularly if severe rudder bar loads are applied while the machine is on the ground.
  2. This control lever is, therefore, to be removed and replaced by part No. H.30300A modified, or by part No. H.33163A. The manner of making this replacement is shown on drawing No. M.I502, copies of which may be obtained from the De Havilland Aircraft Co.,Ltd.
  3. The modification is necessary in the case of the following aircraft only :—  
Constructor's Nos.—2001 to 2037, 2039 to 2063, 2068 to 2072, 2077, 2080 to 2085, 2090, 2091, 2093.
  4. This modification is to be incorporated on all the above aircraft within two months from the date of this notice. No Certificate of Airworthiness in respect of any of the above aircraft will be renewed until the modification has been satisfactorily incorporated.
- [No. 39 of 1930.) Flight - The Aircraft Engineer & Airships, pg. 1388, 28 November, 1930

<b>No. 40 of 1930 : SIMMONDS " SPARTAN " AIRCRAFT, FITTED WITH MAIN PLANES OF SYMMETRICAL SECTION</b>
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1. THEattention of aircraft owners and ground engineers is drawn to the fact that distortion of the compression box ribs at the interplane strut attachment has occurred in aircraft of the above type.
2. These ribs should be examined immediately in all Simmonds " Spartan " aircraft fitted with main planes of symmetrical section.
3. Where replacements of these ribs are found to be necessary, Part No. 669 should be fitted.
4. No Certificate of Airworthiness will be renewed unless the above modifica- tion has been satisfactorily incorporated.
5. This notice does not apply to aircraft of the above type, which may be found to have compression box ribs in accordance with Sketch No.158, fitted in upper and lower planes at the interplane strut attachment.

[No. 40 0/1930.) Flight - The Aircraft Engineer & Airships, pg. 1388, 28 November, 1930

**NOTICE NO. 41 OF 1930. : EXAMINATION OF APPLICANTS FOR GROUND ENGINEER'S LICENCES**

EXAMINATION boards will sit for the purpose of examining applicants for ground engineers' licences at the following times and places:—

- (a) London, on the first and third Wednesdays in every month. (b) Croydon, on the second Wednesday in every month.
- (c) Manchester, on the first Wednesday in January and April.
- ,(d) Birmingham, on the first Wednesday in February and May. (e) Bristol, on the first Wednesday in December and March.

2. Applications for licences should be made on the appropriate form, which is obtainable on request, and should be addressed to The Secretary, Air Ministry (D.C.A.), Gwydyr House, Whitehall, London. Applications for extensions to existing licences will also be dealt with at these boards, and such applications should be sent either by letter or on the usual application form to the address given above.

3. Applications for examination at the centres named at 1 (c), (d) and (c) above, can only be accepted provided that the application is received 14 days before the dates specified and provided also that the total number of applications received are within the capacity of the board. Applicants whose applications are not accepted owing to these provisions will be given the opportunity for early examination at London or Croydon, or, alternatively, to be placed on a waiting list for the next board to be arranged in the particular place concerned

4. Notice to Aircraft Owners and Ground Engineers No . 18 of 1930 is hereby cancelled.  
(No. 41 of 1930.) Flight - The Aircraft Engineer & Airships, pg. 1388, 28 November, 1930

**NOTICE NO. 42 OF 1930 : AVRO 504 .K AND 504 .N AIRCRAFT : DISCONTINUOUS ELEVATORS**

THE requirement regarding discontinuous elevators, as set out in Design Leaflet B.4 of Air Publication 1208, and in Section A of Notice to Aircraft Owners and Ground Engineers No. 24 of the year 1930, is not applicable to aircraft of the above types.

(No. 42 of 1930.) Flight - The Aircraft Engineer & Airships, pg. 1388, 28 November, 1930

**NOTICE NO. 43 OF 1930 : CERTIFICATES OF AIRWORTHINESS—ACROBATIC CATEGORY**

Flight Requirements—Provision of Parachutes and Safety Harness.

(Landplanes and Seaplanes)

THE attention of all aircraft owners and ground engineers is drawn to the fact that the following footnote has been added to Design Leaflet F .I., and will be brought into effect as from the date of issue of this Notice:—

" Note.—Attention is drawn to the following requirements for all aircraft submitted for official flying trials prior to the issue of a Certificate of Air worthiness in the Acrobatic Category :—

(1) Provision is to be made for the fitting of four-piece safety harness of an approved type in the pilot's seat, if an approved type of harness is not already installed.

(2) Provision is to be made for the carrying of seat-type parachutes by personnel when testing the aircraft.

(3) The design of cabin or enclosed cockpit aircraft must be such that easy egress from the cabin is possible should a parachute descent be necessary."

(.Vo. 43 of 1930.) Flight - The Aircraft Engineer & Airships, pg. 1388, 28 November, 1930

<b>NOTICE NO. 44 OF 1930</b>
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**D.H. 80 V. " Puss Moth " Aircraft : Aileron Controls**

1. CASES have occurred of the aileron controls of the above type of aircraft becoming partially jammed at either of two points. The first of these is where the aileron control cable passes through the rear floor of the cabin ; small nuts, screws, etc., may fall down the hole and lodge in the aileron chain below, and so jam in the pulley. The second is where the trailing edge flap hinges up to allow folding of the wings ; unless proper care is used when the flaps are being shut, the aileron cable may be left hanging; in a loop which is jammed as the flap comes down.
  2. To eliminate these risks, two modifications have been introduced. The first consists of two light aluminium covers, part No. H. 33279, for the cable where it passes through the floor, these being secured as shown on drawing No. M. 1514. The second consists of fitting an aluminium channel guard, part No. H. 33495, over the exposed length of cable, and a fibre block, part No. H. 33496, as shown on drawing No. M. 1531.
  3. Arrangements are being made by the makers of the aircraft to supply to all owners the necessary parts and drawings. If these are not received in due course, application should be made to the de Havilland Aircraft Co., Ltd., Stag Lane Aerodrome, Edgware, Middlesex.
  4. The above modifications are to be incorporated in all aircraft of the type in question within two months from the date of this notice.
  5. No Certificates of Airworthiness in respect of any such aircraft will be renewed until the modifications have been satisfactorily incorporated.
- {No. 44 of 1930.} Flight - The Aircraft Engineer & Airships, pg. 1388, 28 November, 1930

<b>NOTICE NO. 20 OF 1930 : CERTIFICATION IN LOG BOOKS</b>
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NOTICE to Aircraft Owners and Ground Engineers No. 4 of 1930 stipulates that the certification in log books of overhauls, repairs, replacements, etc. must be worded in accordance with the requirements of A.N.D.7, para. 57.

A revised aeroplane log book, in which the actual work of certification will be rendered easier by the printing in each page of the wording of the certificate, will be available in the near future.

2. Where it is desired to use the existing type of log book the certification may be facilitated by having the formal wording of the required certificate written or stamped at the bottom of each page. It will then only be necessary when signing for work requiring certification to make reference to the certificate at the bottom of the page.

3. Whichever method is adopted the certification should be such that it clearly meets all the requirements stated in the Notice mentioned above.

Flight - The Aircraft Engineer & Airships, pg. 822, 18 July, 1930

**NOTICE NO. 21 OF 1930 : D.H. 60 X & G WOODEN FUSELAGE "MOTH" AIRCRAFT WITH GIPSY, CIRRUS III OR HERMES ENGINE : MODIFICATION OF FRONT ENGINE BRACKETS**

CASES of fracture of the front engine bracket have occurred on aircraft of the above types.

All such aircraft are, therefore, to be examined immediately for the presence of cracks in the furrow in the side of the bracket.

If any cracks exist, the aircraft is not to be flown until the modification described herein is incorporated. In any case, the modification described herein is to be incorporated within two months of the date of this notice, and the brackets should be frequently examined during that period.

2. The modification consists of removing the front engine brackets, parts No. H.22494, and substituting the new brackets, parts No.H.31682.

3. No Certificate of Airworthiness will be renewed until this modification has been satisfactorily incorporated.

4. This Notice does not apply to aircraft of the above types with Cirrus III or Hermes engines which may be found to be fitted with front engine brackets, parts No. H . 17075.

5. Cancellation : Notice to Aircraft Owners and Ground Engineers No. 12 of 1930 is hereby cancelled.

Flight - The Aircraft Engineer & Airships, pg. 822, 18 July, 1930



<b>NOTICE NO. 22 OF 1930 : "NOTICES TO AIRCRAFT OWNERS AND GROUND ENGINEERS"</b>
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In order to draw the special attention of aircraft owners to the information contained in these Notices, all Notices as from No. 26 of 1929 have been issued under the revised title of " Notices to Aircraft Owners and Ground Engineers."

As a matter of convenience, the Notices issued prior to No. 26 of 1929 under the original title of " Notices to Ground Engineers " will also, in future, be referred to under the revised title.

A new index has now been issued and should be substituted for that published as "Notice to Ground Engineers No. 5 of 1929".

This index gives details of:

- (1) Cancelled Notices;
- (2) Operative Notices ; and
- (3) Amendments.

This index is now procurable from the Air Ministry.

Flight - The Aircraft Engineer & Airships, pg. 822, 18 July, 1930

**NOTICE NO. 13 OF 1930 : HIGH-TENSILE STEEL FORK JOINTS A.G.S. 168 TO 178, AND HIGH-TENSILE STEEL TURNBUCKLES A.G.S. 138 TO 149**

THE following information is substituted for that contained in Notice to Ground Engineers No. 2 of 1923 (revised 31.12.28), which is hereby cancelled.

2. High-tensile steel fork joints A.G.S. 168 to 178 have been found unsafe and their use on any aircraft is prohibited.

Ground engineers should, therefore, take steps to replace any such fork joints, which are incorporated in aircraft or held as spares by mild-steel fork joints conforming to A.G.S. 412 to 422, B.E.S.A. Specification S.P.3, or Stainless Steel fork joints to A.G.S. 678 to 689.

3. The following table gives the A.G.S. numbers of the prohibited H.T.S. fork joints and of the M.S. and S.S. fork joints which replace them.

M.S. fork-joints 412 to 422 are identified by the flats on the ends of the forks, together with the counterboring which extends down each side of the fork gap, and those of S.S. to A.G.S. 678 to 689 are similar but have no collar on the barrel, whereas the original H.T.S. fork-joints A.G.S. 168 to 178 are readily distinguished by the small ribs at the sides of the pin holes.

4. The use of high-tensile steel turnbuckles, A.G.S. 138 to 149, on civil aircraft is still permitted, but, as these turnbuckles are all of war-time manufacture, they should be carefully re-inspected to ensure that no faults have developed during service. The particular defects to be guarded against are fine hair cracks and flaws in the steel ends, and season-cracking of the barrels. (This class of turnbuckle may be readily identified by the A.G.S. number stamped on each turnbuckle.)

5. When replacing any high-tensile steel turnbuckle by a mild-steel turnbuckle conforming to A.G.S. 490 to 497, particular care should be taken to ensure that the former is replaced by its equivalent in the latter class. The following table gives, in each class, the respective A.G.S. numbers of the turnbuckles which are interchangeable in respect of strength and diameter of pin:

Note.—The one exception is M.S. turnbuckle A.G.S. 490, for which no strictly interchangeable H.T.S. size exists, as A.G.S. 138 and 139, which it replaces, were made with two eye-ends only and not with the customary fork and eye-ends.

6. No Certificates of Airworthiness will be issued, or existing Certificates of Airworthiness renewed, in respect of any aircraft on which high-tensile steel fork joints are fitted.

Flight - The Aircraft Engineer & Airships, pg., 23 May, 1930

**NOTICE NO. 23 OF 1930 : AIRCRAFT FITTED WITH CIRRUS ENGINES : REMOVAL OF AIR STRANGLING DEVICE**

1. CASES have recently been noted where aircraft with Cirrus engines installed have an air strangling device, to facilitate starting, fitted to the carburettor air intake.

This device consists of an air supply tube fitted into the pressure balance orifice in the carburettor diffuser jet boss, and a hand-operated sliding brass shutter working between the carburettor and air intake flanges.

2. Aircraft owners and ground engineers are hereby informed that the design of this device is not approved as complying with the safety requirements of civil aircraft, and, in consequence, the device is to be removed forthwith from all aircraft concerned and the standard air intake fitted.

3. The necessary alterations are :—

Remove:

(a) Air supply tube with its securing fittings

(c) Air intake with its special flange,

(b) Brass shutter.

Fit.—(a) Stud to carburettor air (4) Standard air intake and flange. .

(No. 23 Of 1930) Flight - The Aircraft Engineer & Airships, pg. 822, 18 July, 1930

**NOTICE NO. 14 OF 1930 NAPIER " LION " ENGINE : TIGHTENING OF NUTS ON MASTER CONNECTING RODS**

THE attention of aircraft owners and ground engineers is directed to the special care necessary when tightening the nuts on master connecting rod studs of Napier " Lion " engines.

2. These nuts must be sufficiently tight to hold the bearing cap securely under running conditions, but not so tight as to cause stretching of the studs. To ensure this correct tension the engine makers employ a spring loaded spanner set to give a maximum loading of 840in./lb. (120lb.at 7-in.radius).

3. It is very desirable to use spanners such as that referred to in paragraph 2, but when this is not available, a box spanner and a tommy bar, the latter to be not more than 6 in. in length, can be used. The nuts must be tightened by applying a steady pressure to the spanner.

4. If any correction is necessary in order to obtain alignment between the split pin hole in the stud and the castellation of the nut, this must be effected by removing the nut and facing off the bottom face, care being taken that a true surface is obtained between this face of the nut and the bearing cap.

5. Studs for the " Lion " master connecting rod are now made from steel to B.E.S.A. Specification S/65. When any replacements are necessary, studs of this material, which are identifiable by a saw out across the end, should be used.

6. Attention is drawn, in connection with the above, to Notices to Ground Engineers Nos.3 of the year 1927, and 2 of the year 1929.

(No. 14 of 1930.) Flight - The Aircraft Engineer & Airships, pg., 23 May, 1930

<b>NOTICE NO. 15 OF 1930 : BLACKBURN " BLUEBIRD," Mk. IV AIRCRAFT : RUDDER BAR</b>
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1. THE attention of aircraft owners and ground engineers is drawn to Modification No. 53, which calls for a reduction of  $\frac{1}{2}$  in. in the length of the rudder bar tube and  $\frac{1}{2}$  in. diameter end plates on aircraft of the above type, in order to obviate fouling of the rudder bars when adjusted to the extreme front or rear positions.
  2. The modification is covered on Messrs. Saunders-Roe, Ltd., Drawing No. N.C. 1537, Issue 5, copies of which can be obtained upon application to Messrs. Saunders-Roe, Ltd., Cowes, I.O.W.
  3. Until the aforementioned modification has been effected, aircraft owners and ground engineers should ensure that the rudder bars are maintained in the " mean " position.
  4. No certificate of airworthiness will be renewed until this modification has been satisfactorily incorporated.
- (No. 15 of 1930.) Flight - The Aircraft Engineer & Airships, pg., 23 May, 1930

<b>NOTICE NO. 16 OF 1930 : GENET MAJOR ENGINE : INSPECTION AND REPLACEMENT OF AIRSCREW HUBS</b>
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The rear flange of the original type airscrew hub (Part No. S.R. 15081) on Genet Major engines was found liable to crack at the inner ring of lightening holes, there being two such rings of 12 holes each in diameter in each.

2. In hubs of later manufacture (Part No. S.R. 15081/1) the number and diameter of the lightening holes were consequently reduced, the thickness of the rear flange increased, and the specification of the material of the hubs changed.

3. As the result of further experience, the latest type of Genet Major hub now in production, Part No. S.R. 15081/2, has no lightening holes, and has two concentric stiffening flanges on the outer face of the rear flange to obviate any distortion tendency on tightening the airscrew hub bolts.

4. Action has already been initiated by the engine manufacturer to call for the replacement of all the original type hubs referred to in paragraph 1.

5. Aircraft owners and ground engineers are hereby advised that no Certificates of Airworthiness will be issued or renewed in respect of aircraft with this engine installed unless hubs of one of the later types described in paras. 2 and 3 above, are fitted.

6. The replacement should in any case be effected as early as possible, and not later than one month from the date of this Notice.

7. Meanwhile, hubs of the original type should be examined after each flight, and must be discarded forthwith if any indication of cracking is found in the rear flange.

NOTE.—Part numbers are stamped on the outer face or periphery of the rear flange.  
(No. 16 of 1930) Flight - The Aircraft Engineer & Airships, pg., 23 May, 1930

<b>NOTICE NO. 20 OF 1930 : CERTIFICATION IN LOG BOOKS</b>
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1. NOTICE to Aircraft Owners and Ground Engineers No. 4 of 1930 stipulates that the certification in log books of overhauls, repairs, replacements, etc. must be worded in accordance with the requirements of A.N.D.7, para. 57. A revised aeroplane log book, in which the actual work of certification will be rendered easier by the printing in each page of the wording of the certificate, will be available in the near future.

2. Where it is desired to use the existing type of log book the certification may be facilitated by having the formal wording of the required certificate written or stamped at the bottom of each page. It will then only be necessary when signing for work requiring certification to make reference to the certificate at the bottom of the page.

3. Whichever method is adopted the certification should be such that it clearly meets all the requirements stated in the Notice mentioned above.

(No. 20 of 1930.) Flight - The Aircraft Engineer & Airships, pg 822., 18 July, 1930

**No. 21 of 1930 : D.H.60 X . & G . WOODEN FUSELAGE "MOTH" AIRCRAFT WITH GIPSY, CIRRUS III  
OR HERMES ENGINE : MODIFICATION OF FRONT ENGINE BRACKETS**

CASES of fracture of the front engine bracket have occurred on aircraft of the above types. All such aircraft are, therefore, to be examined immediately for the presence of cracks in the furrow in the side of the bracket. If any cracks exist, the aircraft is not to be flown until the modification described herein is incorporated. In any case, the modification described herein is to be incorporated within two months of the date of this notice, and the brackets should be frequently examined during that period.

2. The modification consists of removing the front engine brackets, parts No. H.22494, and substituting the new brackets, parts No. H.31682.

3. No Certificate of Airworthiness will be renewed until this modification has been satisfactorily incorporated.

4. This Notice does not apply to aircraft of the above types with Cirrus III or Hermes engines which may be found to be fitted with front engine brackets, parts No. H. 17075.

5. Cancellation.—Notice to Aircraft Owners and Ground Engineers No. 12 of 1930 is hereby cancelled. (No. 21 of 1930.) Flight - The Aircraft Engineer & Airships, pg 822., 18 July, 1930

Index : 1920-1929

Note.—In order to draw the special attention of aircraft owners to the information contained in these Notices, all Notices as from No. 26 of 1929 have been issued under the revised title of "Notices to Aircraft Owners and Ground Engineers." As a matter of convenience, the Notices issued prior to No. 26 of 1929 under the original title of "Notices to Ground Engineers" will also, in future, be referred to under the revised title.

A new index has now been issued and should be substituted for that published as Notice to Ground Engineers No. 5 of 1929.

This gives details of (1) Cancelled Notices; (2) Operative Notices; and (3) Amendments.

This index is now procurable from the Air Ministry. (No. 22 of 1930) Flight - The Aircraft Engineer & Airships, pg 822., 18 July, 1930



**AIRCRAFT FITTED WITH CIRRUS ENGINES : REMOVAL OF AIR STRANGLING DEVICE**

1. CASES have recently been noted where aircraft with Cirrus engines installed have an air strangling device, to facilitate starting, fitted to the carburettor air intake.

This device consists of an air supply tube fitted into the pressure balance orifice in the carburettor diffuser jet boss, and a hand-operated sliding brass shutter working between the carburettor and air intake flanges.

2. Aircraft owners and ground engineers are hereby informed that the design of this device is not approved as complying with the safety requirements of civil aircraft, and, in consequence, the device is to be removed forthwith from all aircraft concerned and the standard air intake fitted.

3. The necessary alterations are :—

Remove.—(a) Air supply tube with its securing fittings

(c) Air intake with its special flange,

(b) Brass shutter.

36,

Fit.—(a) Stud to carburettor air (4) Standard air intake and flange. . intake flange  
in hole provided

(No. 23 Of 1930) Flight - The Aircraft Engineer & Airships, pg 822., 18 July, 1930

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1931**

**NOTICES NO. 24 OF 1931: MODIFICATION OF SUTTON HARNESS**

Owing to a fatal accident being attributed to the use of the two-pronged safety pin, a three-pronged type is in future to be fitted on this harness.

FLIGHT, APRIL 17, 1931 pg 348

**NOTICE TO PILOTS - PILOT'S SERIES A. No. 3 OF 1931 : AIR NAVIGATION REGULATIONS**

(1) The attention of all pilots and other persons engaged in air traffic over Great Britain and Northern Ireland is drawn to the necessity of keeping themselves familiar with the air navigation regulations, etc., already in force and of acquainting themselves with the amendments and additions to these regulations as issued.

(2) A list of the air navigation regulations, etc., at present in force in Great Britain and Northern Ireland, can be purchased from H.M. Stationery Office, Adastral House, Kingsway, W.C.2, or through any bookseller.

(3) New regulations, adding to, amplifying or amending the existing regulations, are issued from time to time. Brief particulars of these are published in Notices to Airmen.

(Pilot's Series A. No. 3 of 1931.

<b>NOTICES No. 25 OF 1931: D.H. 60X, G &amp; M "MOTH" AIRCRAFT. MAIN PLANE LOCKING BOLTS</b>
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Modification to the bottom front spar locking bolt of " Moth " aircraft.

The tapered end is shortened owing to it having been found that the bolt has exhibited a tendency to ride forward on the taper under load.

FLIGHT, APRIL 17, 1931 pg 348

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1932**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1933**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1934**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1935**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1936**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1937**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1938**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1939**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1940**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1941**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1942**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1943**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1944**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1945**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1946**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1947**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1948**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1949**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1950**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1951**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1952**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1953**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1954**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1955**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1956**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1958**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1959**

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**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1962**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1963**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1964**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1965**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1966**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1966**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1967**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1968**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1969**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1970**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1971**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1972**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1973**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1974**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1975**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1976**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1977**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1978**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1979**

**AIR MINISTRY NOTICES TO GROUND ENGINEERS : 1980**

<p><b>POLICY ON PROPOSED TRANSFER OF RESPONSIBILITY OF NOTICES TO AIRCRAFT OWNERS AND GROUND ENGINEERS FROM AIR MINISTRY TO AIR REGISTRATION BOARD - 1943 -1944</b></p>
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## Highlights from the "FLIGHT" Journals regarding:

<p><b>RESETTLEMENT OF EX-RAF OFFICERS AND MEN POST WW1<sup>358</sup></b></p>
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THERE are many officers and men of the R.A.F. who are demobilised or about to be demobilised. In order to assist those who are undecided or are seeking advice as to their prospects in civil life, the Editor has arranged for an expert, with wide experience of service, industrial and educational conditions, to give advice to those who may solicit it through the medium of this Journal. Applications, which must be in writing, should be marked "Resettlement", and addressed to the Editor, FLIGHT, 36, Great Queen Street, Kingsway, W.C. 2. They will be dealt with in these columns, as far as possible, in rotation (in turn).

**T. R. H., EX-"FLIGHT" CADET (Officer).**—"We think the best course to pursue in your case is to

- (1) remain in your present post ;
- (2) take a degree course (evening) in mechanical engineering at a local polytechnic ;
- (3) study standard aeronautical books and
- (5) spend the time in the journals (read "Flight") ;
- (4) join the Royal Aeronautical Society ;

your vacation, if possible, taken in an aircraft works.

Once you have obtained the necessary qualifications there will certainly be good openings in commercial aviation in the capacity you suggest.

**Mr J. A.H., EX-FLIGHT SERGT. (Enlisted Man)** —You will be best advised to remain in your present post and await developments in commercial aviation. Judging from your Service experience only (*as you have not stated your civil qualifications*) we think that the kind of *post in civil aviation which you have a reasonable chance of obtaining is that of "ground engineer (engines)."* If you decide on this you should take the necessary steps to secure a licence. See **Section IV , Supplementary Air Regulations, Air Navigation Regulations**, reproduced in FLIGHT, May 8, 1919. (Flight May 15, 1919 pg. 658)

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<sup>358</sup> Flight - The Aircraft Engineer & Airships, pg May 15, 1919)

## Notes on "Civil Aviation"

7. Inspection of Aircraft at Aerodromes.—It will be noted that a necessary part of the aerodromes management is the provision of licensed ground engineers. As there has not yet been time for firms to provide these, the A.I.D. has been called upon, as a temporary measure, to provide a certain number of skilled personnel to assist. It must be remembered, also, that it is only from aerodromes where licensed ground engineers are located that aeroplanes can start.

8. Military Markings.—The bulk of machines which will at first take part in civil flying, having been built as Service machines, are marked with red, white and blue rings, and bear Government numbers. The existing Government numbers will be allotted to these machines as temporary registration marks. When permanent marks are allotted the old registration numbers must be erased and the new permanent marks put on within 14 days of allotment. Owners of aircraft upon which the service ring markings are painted must obliterate them

### SCHEDULE II.—Licensing of Personnel - Licensing Authority

#### Pilots.

2. A person applying for a pilot's licence to fly passenger or goods aircraft will be required to—(a) pass a medical examination carried out under the control of the Secretary of State ; (6) produce a certificate of competency issued by the Secretary of State, or be qualified as a Royal Air Force pilot ; (c) submit proof of recent reasonable flying experience on the class of machine for which the licence is required, or failing such proof undergo practical tests.

3. A person applying for a pilot's licence to fly machines other than passenger or goods aircraft must either be qualified as a Royal Air Force pilot, or produce a certificate of competency issued by the Secretary of State.

#### Engineers.

5. A person applying for a licence to be engaged as engineer on passenger or goods aircraft will be required to—(a) pass a medical examination carried out under the control of the Secretary of State ; (6) submit proof of sufficient knowledge and experience in the management of aircraft engines ; (c) undergo, if necessary, practical and theoretical tests

### SCHEDULE III.—Certificates of Airworthiness for Passenger Aircraft and Periodical Overhaul and Examination of such Aircraft.

#### General

1. A certificate of airworthiness in respect of one aircraft of any type (hereinafter referred to as " a type aircraft ") will be issued by the Secretary of State in accordance with the conditions set out in this schedule at a charge of five guineas.

2. After the issue of a certificate of airworthiness to a type aircraft, any further aircraft of that type will be inspected for airworthiness by employees of the constructor, under arrangements approved by the Secretary of State, and if the aircraft in respect of which a certificate of airworthiness is desired conforms in all essential respects with the type aircraft, and is of satisfactory workmanship and materials, a certificate of airworthiness will be issued in respect of such aircraft by the Secretary of State at a charge of one guinea : Provided that the Secretary of State may take steps to test the inspection made by the employees of a constructor, and if such test inspection, in his opinion, warrants such a course, may order a further inspection to be carried out by any person or persons duly authorised by him, and to issue or refuse a certificate, as he may decide, after such inspection, or to refuse to issue certificates of airworthiness in respect of further aircraft of the same type

## Notes on "Civil Aviation"

as that subjected to such test inspection that have been or may be constructed by the particular constructor.

3. Licences to competent persons for the purposes of this schedule shall be granted by the Secretary of State on compliance with such conditions as he may direct.

### Periodic Overhaul

5. All passenger aircraft must be inspected, overhauled and certified as airworthy by competent persons appointed by the owners or users of them, and licensed for the purpose under this schedule, at such times as the Secretary of State may direct, and such certificate or certificates must be produced to the Secretary of State on demand.

6. Aircraft inspected, overhauled, or certified as provided in the foregoing paragraph may be inspected by authorised representatives of the Secretary of State, and the Secretary of State is entitled under these regulations to cancel or suspend the certificate of airworthiness of any aircraft deemed to be unsafe as a result of such inspection.

### Examination before each Flight

7. No passenger aircraft carrying passengers shall on any day proceed on any journey unless it has previously been inspected at least once on that day by a competent person licensed for the purpose under this schedule, who shall not be the pilot of the particular machine.

8. If such competent person is satisfied that the aircraft is fit in every way for the flight or flights proposed he shall sign in duplicate a certificate to that effect, which certificate shall be countersigned by another person in the employment of the owner, giving the time and date of such certification. For this purpose the countersignature of the pilot may be accepted.

9. One copy of each certificate will be retained by the owner of the aircraft, and the duplicate copy must be carried in the aircraft.

10. The pilot will be responsible for seeing that the aircraft, before commencing any flight, is, in his opinion, in a satisfactory condition, and does not carry more than the load specified in the certificate of airworthiness, and must sign a certificate to that effect.

## SUPPLEMENTARY AIR REGULATIONS

### METHOD OF APPROVAL OF WORKMANSHIP AND MATERIALS

20. Type Aircraft.—(a) Inspection of type aircraft will be carried out by representatives of the Secretary of State.

(6) The Director of Aircraft Inspection will accept wherever in his opinion possible the inspection of details, components and /or materials for type aircraft made by employees of the constructor under the supervision of his representative, but each component will be finally inspected and approved by a representative of the Director of Inspection, who will co-operate with the constructor's inspecting staff.

Constructors must notify Director of Aircraft Inspection seven days before commencing work on any part of the aircraft, the inspection of which is necessary prior to further work.

(c) The constructor must also fulfil the conditions detailed hereunder for subsequent aircraft.

21. Subsequent Aircraft.—(a) Constructors must satisfy the Secretary of State that their inspecting staff is such as to ensure that aircraft passed by them conform in all essential respects to the type design.

(b) Constructors must purchase material to the specifications approved for the type design, and must arrange that each and every batch of such material is proved to comply with such specifications by suitable examination, sampling and testing, as may be approved by the Director of Aircraft Inspection.

(e) Constructors must make such arrangements at their works as will preclude the use of material other than that approved as in para, (b) above.

## Notes on "Civil Aviation"

(d) Constructors' inspecting staffs, referred to in 21 (a) above, must stamp or otherwise provide means for the identification of each and every detail, in such a way that the individual responsible for such approval can subsequently be traced, selective inspection being adopted where considered possible.

(e) Constructors must issue only details or parts approved as in para. (c) above to the shops for assembly into components.

(f) Constructors must maintain an efficient process inspection during such work of assembly, and record such inspection on a process card for each component. Every component must be finally inspected by a qualified member of their inspecting staff, who will stamp the component in such a way that he may afterwards be identified, and will also sign the process card.

(g) Constructor's methods of carrying out the following operations must be approved by the Director of Aircraft Inspection, or other recognised authority, viz. : Heat-treatment of steel, seasoning and conversion of timber, glueing of important parts, and doping.

(h) Constructors must ensure that all instruments and other parts affecting airworthiness purchased from sub-contractors have been inspected and approved in accordance with these conditions.

(i) Constructors (aircraft or engine as may be arranged) must ensure that all engines have been inspected and approved in accordance with these conditions, and further, that they have satisfactorily undergone such bench tests as are required by the Secretary of State, and for this purpose that suitable test stands and accessories are provided to the satisfaction of the Director of Aircraft Inspection.

(j) Aircraft constructors must carry out an efficient inspection of the installation of all engines, instruments and parts that are fitted by them into the aircraft, such inspection to ensure that they function correctly, the individual responsible being indicated by a signature on the process card referred to above.

(k) Constructors must limit the power of their inspection staff to grant concessions to matters which do not affect the weight, the strength or the functioning of the part. Should any of these points be affected, the matter must be referred to the designer of the aircraft, and if affecting the type design, to the Director of Research as laid down for modifications to type designs.

### IV.—Persons Competent to Undertake Periodical Inspection and Overhaul and Examination before each Flight of Aircraft

1. With reference to Regulation 2 (1) and Schedule I II (3 and 5-10), the following is the procedure for any person desirous of being licensed as a competent person, hereinafter referred to as "ground engineer," to undertake the inspection of periodic overhauls of aircraft required to be certified as airworthy, or as a competent person to examine such aircraft before each flight.

2. Applications for licences should be made to the Secretary, Air Ministry, London, W.C. 2

3. Application forms will be supplied on demand.

4. Subsequent to the forwarding to the Secretary, Air Ministry, of an application form for a ground engineer's licence, the candidate will be requested to report to a local representative of the Director of Aircraft Inspection for examination. At this examination the candidate will be required to submit proof :—

(a) That he is not less than 21 years of age.

(b) That he has served at least two years as a mechanic or engineer on internal combustion engines, or a like period on aircraft construction or maintenance, or a period of not under three years on joint aero, engine and aircraft construction or maintenance.



## Notes on "Civil Aviation"

5. A candidate may apply to be licensed as a ground engineer to overhaul and inspect all flying machines and/or engines after overhaul and each day before flight ; or may apply for a licence limited to the inspection of any named type or types of flying machine or engine either after overhaul and /or each day before flight.
  6. Candidates will be required to submit proof of knowledge:—
    - (a) For engines : Of the general principles of internal combustion engines applied to aircraft, including the general principles of ignition, carburaticn lubrication and cooling ; knowledge of the inspection, testing and adjustments necessary for the installation and functioning of the complete power unit in the aircraft ; and the capacity to supervise, or inspect running repairs and/or overhaul of particular engines.
    - (b) For flying machines : The general principles of construction, rigging, trueing-up and adjustment of flying machines ; a detailed knowledge of construction, adjustments, maintenance and final inspection of the flying machine's components ; and the capacity to supervise, or inspect running repairs, and /or the overhaul of specified types of flying machines.
  7. The examination may be in part written, and in part oral. Candidates may be required to give practical proof of knowledge.
  8. Aircraft certified daily by such licensed ground engineers will be eriodioally re-inspected by a person or persons duly authorised by the Secretary of State, who reserves the right to suspend or revoke licenses granted as above should such certified aircraft be deemed by him as a result of such examination to be unsafe.
  9. Ground engineers certifying flying machines or engines as airworthy after overhaul, must be in a position to certify that all the conditions required for the inspection of subsequent aircraft during construction that apply to the overhaul have been carried out. The Secretary of State reserves the right to suspend or revoke the licence of the ground engineer responsible for certifying that the overhaul has been correctly carried out, should a test inspection be deemed by the former to indicate that the flying machine is not airworthy.
  10. Ground engineers' licences will be issued at a charge of 5s., and will be valid for a period of twelve months, and will then t e subject to renewal. The Secretary of State reserves the right to re-examine the candidate for renewal, if considered necessary.
- i r . In the event of any applicant being required to undergo a practical examination, a further fee of one guinea will be charged.

### V.—Instructions for Use of Log Books

1. With reference to Regulation 2 (3) and Schedule V, the several log books should contain the information shown below.
  2. The constructor should fill in and sign the original entries in the log book, as far as he is in a position to do so. Subsequent entries should be made and signed by the pilot or competent person.
  3. A copy of the certificate of airworthiness should be kept in the pocket at the end of the aircraft log book.
  4. All entries to be in ink, except in the case of journey and signal log books, the entries for these may be made in pencil in a rough notebook, but should be entered in ink in t h e log book every 24 hours. In the event of any official investigation the rough notebook may be called for.
  5. No erasures should be made in, nor pages torn from, any log book.
  6. A copy of these instructions should be inserted in each log book.
- I.—Journey Log.—(a) Type to which the aircraft belongs : its nationality and registration marks ; the name, Christian names, nationality and residence of the owner ; name of contractor and the carrying capacity.
- (6) In addition for each journey :—(i) The name, nationality and residence of the pilot and crew, (ii) The place, date and hour of departure, the route

## Notes on "Civil Aviation"

followed, and all incidents en route, including landings and weather conditions.

### II.—Aircraft Log.

A log book shall be kept for the aircraft and shall always accompany the aircraft. It shall contain the following particulars :

1. Type to which the aircraft belongs,
- 2.
3. nationality and registration marks, the name, Christian names and nationality and residence of the owner, name of constructor and the carrying capacity, and capacity of tanks. (6) Type and series number of engine, type of propeller showing number, pitch, diameter and maker's name, (c) Type of wireless apparatus fitted, (d) Table showing the necessary rigging data for the information of persons in charge of the aircraft and of its maintenance. A fully detailed engineering record of the life of the aircraft, including all acceptance tests, overhauls, replacements, repairs and all work of a like nature. Specimen sheets are given which show the following form of which should be followed. Date & hour of entry;
  - A. Name of Commanding officer ;
  - B. route flown;
  - C. time in air in hours & mins. ;
  - D. petrol consumed ; oil consumed ; water consumed ;
  - E. number of passengers carried;
  - F. repairs or replacements made;
  - G. time in the air since last overhaul in hours, mins.,
  - H. date of last overhaul;
  - I. remarks ;
  - J. signature of authorised person.

### III.—Engine Log.

A separate log book shall be kept for each engine and shall always accompany the engine. It shall contain the following particulars :-

1. Type of engine, series number, makers' name, power, normal and maximum revolutions of engine, date of acceptance and first date put into service; petrol consumption; oil consumption.
2. Registration mark and type of aircraft in which the engine has been installed,
3. A fully detailed engineering record of the life of the engine, including all acceptance tests, hours run, overhauls, replacements, repairs and all work of a like nature. Specimen sheets are given which show the following form of which should be followed.
  - K. Date & hour of entry;
  - L. Name of engineer in charge ;
  - M. Engine(s) revolutions per minute : on ground & time run ;
  - N. Engine(s) revolutions per minute : in air (state climbing or level) & time run ;
  - O. defects found ;
  - P. particulars of overhaul or replacements made;
  - Q. time run since last overhaul in hours, mins.
  - R. date of last overhaul;
  - S. remarks ;
  - T. signature of authorised person.

### IV.—Signal Log :-

1. Type to which the aircraft belongs,
2. nationality and registration marks ;
3. the name, Christian names and nationality and residence of the owner.
4. Place, date and time of the transmission or reception of any signal,
5. Name or other indication of the person or station to whom a signal is sent or from whom a signal is received.

the Air Ministry issued the Air Navigation Regulations, 1919, which are to control civilian flying until a more permanent set of rules, based on experience, can be formulated. The 1919 Regulations have been drafted for the (National) control, direction and assistance of civil aviation in the British Isles, and do not apply to international aerial traffic.

## Notes on "Civil Aviation"

Regulations (*that apply to **international aerial traffic***) will not be issued until the Peace Conference in Paris has agreed upon the shape such international regulations are to take.

It is understood, however, that :-

1. the present Regulations have been drafted in accordance with recommendations made by the Aviation Committee of the Peace Conference, so it is reasonable to assume that they bear some sort of family likeness to those that will ultimately be issued for the control of international traffic. (in fact the ICAN is based upon the British regulations - C.G Grey got this backwards)
2. these present Regulations' **do not apply to any of the British Dominions**, which are left free to formulate their own aerial laws (or adopt the British regulations) and which are, it is understood, drafting such laws now and basing them on their own conditions and their varying Customs requirements. (Canada adopted the British regulations, however it did so partially and only in so far as "Operations" were to be controlled as the Air Board adopted the RAF's KR&O!, the "technical aspect" followed was that for the RAF and entirely British to begin with) FLIGHT, May 8, 1919 pg 588

To begin with, *the rules as to the licensing of pilots are extremely stringent, as, in the interests of public safety, they must be.*

The applicant for a pilot's licence (for the carrying of passengers and goods) must :-

1. pass a medical examination carried out under the control of the Secretary of State,
2. produce a certificate of competency issued by the same authority, or be qualified as a Royal Air Force pilot.
3. submit proof of recent reasonable flying experience on the class of machine for which the licence is required, or, failing such proof, undergo practical tests.

In the case of applicants applying for licences to fly machines other than for the carrying of passengers and goods, the proof of recent flying experience is, apparently, not required.

*The regulation is practically identical in the cases of navigators and engineers except that again the **proof of recent flying experience** is not demanded.*

Pilots' licences remain in force for six months and others for twelve, but there is an additional proviso that *holders of (pilots') licences may be required from time to time to undergo further medical examinations under the control of the Secretary of State.*

FLIGHT, May 8, 1919 pg 588

*Stringent rules are made for the further periodic inspection and overhaul of all passenger aircraft, while it is also laid down that no such aircraft shall on any day proceed on a journey until it has been inspected at least once on that day by a competent person licensed for that purpose under the Regulations.*

*If the inspector is satisfied that the aircraft is fit in every way for the flight proposed, he must sign in duplicate a certificate to that effect, which certificate must be countersigned by the pilot **OR by some other person in the employ of the owner**, one copy to be carried in the aircraft while the other is to be retained by the owner.*

This seems again to be quite a sound arrangement.

It definitely fixes the responsibility for failure in case of any accident due to causes which ought to have been foreseen and guarded against, and will, moreover, tend to ensure care in the work of inspection.

Taken all round the Regulations, so far as they relate to the competency and fitness of aircraft and their crews and the consequent safety of aerial navigation, seem to leave very little to be desired. FLIGHT, May 8, 1919 pg 588

In Parliament : the staff and work of the Civil Aviation Department

Civil Aviation Department

Mr. JOYNSON-HICKS asked the Under-Secretary of State to the Air Ministry whether he can now make a statement as to the staff and work of the Civil Aviation Department ? May 1919 ??? HCD ?

Mr. Pratt (Lord of the Treasury) response:

1. The provisional staff for the Department of Civil Aviation has been put forward by the Controller-General and
2. the Controller-General's proposals are now being considered by the Re-organisation Committee preparatory to obtaining Treasury sanction for the organisation as a whole.

In the meantime, provisional *Treasury sanction has been obtained for some of the higher posts in the Department* and the Controller-General is carrying on *with a nucleus staff lent by the Royal Air Force and composed of officers who have during the War gained the necessary experience in the various directions required.*

The work which the Department of Civil Aviation will, at present, undertake may be broadly divided into four heads, of which I am circulating a full description with the Official Report, as it is too long for oral answer.

The following is the description referred to in the last paragraph of the foregoing answer :—

(1) For general consideration, co-ordination and planning, including that of air routes both at home and abroad. For examining and advising on the broad aspects of schemes for commercial aviation. The branch will have 2 main subdivisions:

1. one to deal with questions concerning the United Kingdom and

## Notes on "Civil Aviation"

2. the other *to deal with similar matters arising overseas.*

(2) To obtain, co-ordinate and issue technical and non-technical information of value to the industry and the other branches of the Department through the Controller-General to supply information to the Royal Air Force and all other services concerned.

In this branch 3 sub-divisions are being formed :-

1. one to deal with non-technical information ;
2. one to deal with technical subjects, and
3. the third to co-ordinate and issue information of every kind and to deal with publicity generally.

(3) The third branch will be known as the " Communications " Branch, and its duties will consist in giving technical advice and assistance to aerial navigation in regard to navigation questions and all forms of signals and communications, including wireless, directional, and otherwise, visual signals and land lines. This branch will also be responsible for work in connection with aerial surveys and for the preparation and issue of special maps and charts necessary for aerial navigation. It will have 2 main sub-divisions :-

1. one to deal with signals in a broad sense, and
2. the other with navigation, charts, maps, and survey.

(4) The fourth branch will deal with questions relating to the inspection and organisation of all aerodromes used for civil purposes, and with the licensing and registration of aerodromes, aircraft, pilots, and technical personnel employed in civil aviation. It will also carry out the investigation of accidents and their causes and the compilation of technical reports and records relating to this subject.

This branch will have 3 main divisions :-

1. The first will deal with the inspection and organisation of aerodromes, and airship and seaplane stations ;
2. the second with the licensing and registration of, aerodromes, aircraft, and personnel ; and
3. the third with accidents.

In addition to these four branches it is proposed that there should be a Meteorological Section directly under the Controller-General. This section would deal with the location and supervision of local meteorological centres and stations, the issue of forecasts, warnings, and upper-air information, and generally with the meteorology of air routes. It would also carry out special investigations into climatic conditions generally, taking care to co-ordinate its operations with any other services concerned. At present the general question of the organisation of the meteorological services is under consideration by the Cabinet, but pending a decision the Controller-General has taken over the meteorological branch which served the Royal Air Force during the War, and the personnel of this branch are being lent provisionally to his Department, which supplies all information required by the Royal Air Force. FLIGHT, May 8, 1919 pg 619

### EX-ARMAMENT CAPT., R.A.F.

1. We fear you would not possess sufficient technical knowledge for the kind of post you suggest.
2. In the Service what really matters is the ability to handle the finished article, but in a works it is different.
3. What is usually required in the latter is thorough practical knowledge with capability for design.
4. This knowledge generally takes years to acquire.
5. We think you would be best advised to approach one of the firms you mention with a view to spending a year or two in the works and subsequently specialising in Aerial Armament. FLIGHT, May 8, 1919

### A.H.G., LIEUT., R.A.F., B.E.F.

You can *improve your knowledge by private study and by taking advantage of the Army Education Scheme.* A few good books to read are :—

1. The Aeroplane," by A Fage, A.R.C.Sc. (Griffin and Co., Ltd.) ;
2. Aeroplane Design." by F. S. Barnwell McBnde, Nast and Co.) ;
3. The Design of Aeroplanes," by A. W. Judge, A.R.CSc. (Whittaker and Co.).

*On demobilisation* you will find that *there are facilities offered for a course of Aeronautical Engineering* by the "Appointment Department" of the Ministry of Labour. FLIGHT, May 8, 1919

### E.S.C., EX-LIEUT., R.A.F.

Unfortunately many others are in the same boat. We can only suggest that you seek employment in your normal profession. FLIGHT, May 8, 1919

## Notes on "Civil Aviation"

J.A.C., EX-LIEUT., R.A.F

We think you are well advised in starting in the motor trade. With your previous experience we cannot but anticipate that you will be successful. FLIGHT, May 8, 1919

G.M.H., EX-FLIGHT CADET.

We think you will be best advised to seek immediate employment in the profession in which you have served your apprenticeship, and in which you state you have had considerable experience.

*There is very little prospect of employment in any branch of aviation at present. Moreover, the supply is vastly in excess of the demand.* FLIGHT, May 8, 1919

Mr. L. G. R (Mechanic, Engines) (enlisted man)

In view of the large number of highly skilled mechanics available, and also the limited number required for civilian aviation, we fear that with your present *lack of "works experience"* there is little chance of you obtaining employment in commercial aviation as an engine mechanic. See also reply to J. A. H., Ex-Flight Sergt. above. (Flight May 15, 1919 pg. 658)

Mr. A.J H Ex-CORPORAL (balloon corps)

You may experience great difficulty in securing civilian employment of a similar nature to your Service work. Possibly Messrs. Vickers, Ltd., Basil Street, Knightsbridge, S.W. 3, may have vacancies for *hydrogen workers*. (Flight May 15, 1919 pg. 658)

W.S., EX-FLIGHT SERGT. Ex-Rigger (enlisted man).

In spite of your excellent record *you may experience great difficulty in finding employment in civilian aviation*. It is largely a matter of supply and demand. We think you will be best advised to resume your pre-War occupation and await progress in commercial aviation. You should watch the " Situations Vacant " columns in this journal ; for example, in last weeks' issue (May 22, 1910) Cricklewood, N.W. 2, advertised for aerodrome fitters and riggers. *When applying for a situation you should give details of your experience, such as the particular machines with which you are familiar*, your age, etc. (Flight 29 May 1919 pg. 721)

J.J.S., Ex-RIGGER. (enlisted man)

Models are not required when patenting an invention. The idea can be described and illustrated by engineering drawings. A fee of £1 has to be paid on making application to the Patent Office (25, Southampton Buildings, W.C.) for provisional protection of an invention. When a complete specification is filed, a fee of £3 is payable. A further fee of £1 is incurred on the application to have the patent sealed. The following fees have to be paid subsequently : 5th year, £5 ; 6th year, £6 ; 7th year, £7 ; 8th year, £8 ; 9th year, £9 ; and so on. With regard to the possibilities of employment as a rigger in civilian aviation see reply to W.S. above. (Flight 29 May 1919 pg. 721)

### THE BAN ON CIVILIAN FLYING

"SINCE the ban on civilian flying was raised (lifted) on May 1, 1919 there has been so much activity that it is only possible to record the outstanding flights, and a few which are but typical of many others.

Post WW1, The first (Civilian Transport) flight under the new regulations in England was that of a D.H. 9 with 250 h.p. B.H.P. engine, which left Hounslow *before dawn*, with a parcel of Daily Mails, for Bournemouth.

Unfortunately, fog was encountered in the neighbourhood of Portsmouth, and a forced landing on the Portsdown Hills resulted in the machine being wrecked and the pilot, Capt. H. J. Saint, D.S.C., and the passenger, Capt. D. Greig, being injured.<sup>359</sup>

### FOREST PROTECTION IN CANADA

MR. STUART GRAHAM, who *was a naval air pilot* in the R.A.F., has arrived at Ottawa to take charge of two planes released by the Canadian Department of Naval Affairs for forest protection in Quebec. (Flight - May 8, 1919 page 607)

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<sup>359</sup> Flight - The Aircraft Engineer & Airships, pg 607 08 May, 1919

**AVIATION CLASSES**

[2226] I note that in your issue of November 1 you make reference to the classes which have recently been commenced at the de Havilland Aerodrome, Edgware, under the control of the Middlesex Education Committee.

You will be interested to know that students are prepared for the Air Ministry's certificates, Category A, B, C, D, and X, and (that) the Senior Classes prepare for the Associate Membership and Associate Fellowship of the Royal Aeronautical Society.

In most of the classes there are now no vacancies for students, but a few more can be included in the Senior Class. I should be grateful if, through the medium of your journal, you could make it known that a limited number of students may be admitted to fill these remaining vacancies. The fee for the session is 30s. or 15s. if single subjects are taken.

H. M. WALTON Middlesex Education Committee. November 19, 1929<sup>360</sup>

**NOTICE TO AIRMEN No. 15 OF 1929 : MAINTENANCE OF AIRCRAFT AND ENGINE LOG BOOKS**

OWNERS of British aircraft that are used for private flying only (i.e., not flown for carrying passengers or goods for hire or reward\*) are strongly recommended in their own interests to maintain aircraft and engine log books so as to have available at all times a complete record of repairs and overhauls.

This record is particularly valuable when the aircraft has to be examined for renewal of its certificate of airworthiness.

It will not only facilitate consideration of the owner's application for renewal, but will obviate the difficulties and consequential delay which are likely to arise when particulars of repairs and overhauls have to be obtained from the firms who have carried out such work since the aircraft was last examined.

The aircraft logbook (C.A. Form 27) and engine log book (C.A. Form 28) can be purchased from H.M. Stationery Office, either directly or through any bookseller, at a cost of 2s. 6d. each (exclusive of postage). Refills for either book can similarly be purchased at a cost of 1s. 3d. each (exclusive of postage),

\*Note—Aircraft and engine logbooks are required to be kept for all air-craft intended or used for carrying passengers or goods for hire or reward. (See para. 1 (b) of Schedule III to the Air Navigation (Consolidation) Order 1923.)

Flight - The Aircraft Engineer & Airships, pg. 250, 21 March, 1929

**ENGINEERS - EXAMINATION SUCCESSES!**

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THE TECHNOLOGICAL INSTITUTE OF GREAT BRITAIN (Est. 1917), 248, Temple Bar House, London, E.C.4.

Flight - The Aircraft Engineer & Airships, pg xxvi. 73, 16 May , 1929

<sup>360</sup> Flight - The Aircraft Engineer & Airships, pg. 1268, 29 November, 1929



**FLIGHT CADETSHIPS FOR R.A.F AIRCRAFT APPRENTICES : FEBRUARY 1928**

Air Ministry announcement:

Five (RAF) Aircraft Apprentices have been selected for cadetships at the Royal Air Force Cadet College, Cranwell, on the results of the examinations held on completion of their *three years' training as aircraft* (trades') *apprentices*.

1. from No. 1 School of Technical Training (Apprentices), Halton,
  1. A . Earle (Beworthy, Devon),
  2. C . J . Giles (Leyton),
  3. W . Snwyer (Golders Green)
  4. W . N . VtiKschnie (Golders Green),
2. from the Electrical and Wireless School (Apprentices), Flowerdown,
  1. F . Wicks (Lacock, Wilts)

In addition,

"Sir Charles Wakefield" Scholarships, valued at £75 each, have been awarded to:

1. Flight Cadet A. Earle and
2. Flight Cadet C. J. Giles

the Hyde-Thomson Memorial Prize, valued at about £33, has been awarded to:

1. Flight Cadet F . Wicks (Lacock, Wilts)

Flight - The Aircraft Engineer & Airships, pg. 73, 02 February, 1928

**FLYING IN CANADA : CLUB MOVEMENT AND AIR SURVEY**

The influence of the flying club movement is spreading to the farthest corners of the globe <sup>361</sup>.

The *organisation adopted* (for the club) *is often an emulation of that which prevails in England*, which becomes natural when it is found that in many instances the organisers or instigators are well-known English pioneers of aviation, or whatever their aviation experience - it was obtained in England, invariably during the war.

A case in point is that at Victoria, British Columbia, where a flying club has been formed recently with Mr. Sydney Pickles as its honorary secretary. <sup>362</sup>

The directors (of the Victoria B.C Flying Club) "have considerable experience of aviation", *mostly as pilots*.

1. **Mr. A. V. Carter**, M.B.E., D.S.C., late Capt., R A F .- President.
  1. learned to fly in 1916 a
  2. saw service in France.
  3. Was attached to the Canadian Air Board as Air Station Supt., and
  4. *is now a certified commercial pilot and ground engineer.*
2. **Mr. Awde**, director
  1. Flight-Lieut., R.A.F (retired list),
  2. learned to fly in 1917,
  3. served in France with 56 Squadron,
  4. passed through a special instructor's course at Gosport,
  5. became instructor at the Central Flying School, Upavon, and
  6. became a test pilot in the R.A.F.
3. **Mr. L. de S. Duke**, director
  1. Capt., R.A.F,
  2. holds, the D.F.C.
  3. saw service in France.
4. **Mr. R. H. B. Ker**,

<sup>361</sup> Flight - The Aircraft Engineer & Airships, pg.214, 29 March 1928

<sup>362</sup> Flight - The Aircraft Engineer & Airships, pg.214, 29 March 1928



## Notes on "Civil Aviation"

1. late Maj., R.A.F.,
  2. learned to fly in 1915,
  3. Served in France
  4. was in command of a training squadron at Camp Borden, Ontario,
  5. Prominent business-man in Victoria.
5. **Mr. J. Gray, director**
1. B.Sc, Toronto University,
  2. late Capt., R.A.F.,
  3. learned to fly in 1917,
  4. served as instructor at Camp Mohawk, Canada,
  5. went to France with 27 Squadron,
  6. did test work at Martlesham.
  7. *In 1919 he did a lot of flying round Victoria in connection with the old Aerial League.*
6. **Mr. W. L. Stewart Macleod, director**
1. member of the London Aeroplane Club, which he joined in 1926.
7. **Mr. Evan Hanbury, director**
1. late Lieut., R.A.F.,
  2. holder of the Military Medal.
8. **Mr. E. Eve, director**
1. President of the B.C. Airways Co., Ltd.
9. **Mr. G. Cameron, director**
1. late R.A.F.,
  2. lawyer.
10. **Mr. Sydney Pickles - Club Secretary**
1. Australian pilot who was well known in England during the war and before the war.
  2. Obtained his pilot's certificate, No. 263, in 1912,
  3. served as assistant instructor at the Bristol School,
  4. served as chief instructor at the Ewen School, Hendon,
  5. Became a Flight- Lieutenant, Royal Naval Air Service 1914,
  6. saw active service under Commander Sampson in France,
  7. became chief instructor at Eastchurch,
  8. seaplane and flying-boat instructor at Calshot.
  9. During his career he has flown over 7,000 hours. [...]

In a fortnight, 38 flying members joined the club. The Dominion Government's gift of two light aeroplanes is hoped for by May, in order to commence flying instruction...."

## The "R.AE.S" and the "INST.AE.E"

Royal Aeronautical Society and the Institute of Aeronautical Engineers <sup>363</sup>

### ROYAL AERONAUTICAL SOCIETY

"THE ROYAL AERONAUTICAL SOCIETY"

WITHIN WHICH IS INCORPORATED

"THE INSTITUTION OF AERONAUTICAL ENGINEERS"

OFFICIAL NOTICES:
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- I. A DINNER was given at the Army & Navy Club by the Council of the Royal Aeronautical Society to Colonel "the Master of Sempill" - The Honourable William Francis Forbes-Sempill on November 8, as a mark of appreciation of the immensely valuable services which he has rendered to the Society during the period he has been Chairman.
- II. The Master of Sempill received, in July last, the unusual honour of being unanimously elected by the Council Chairman of the Society for a second year in succession. *During his term of office, and largely due to his genial and tactful personality, the long-drawn-out negotiations between the Society and the Institution of Aeronautical Engineers were brought to a happy conclusion after four years.*
- III. Among those present at the dinner were :
- a) R.A.F Colonel the Master of Sempill, The Honourable William Francis Forbes-Sempill, Engineer, FRAeS & British Peer,
  - b) R.A.F Air Vice-Marshal Sir W. Sefton Brancker, Deputy Director of Military Aeronautics (killed 5 October 1930 in the loss of airship R101)
  - c) R.N.A.S Captain P.D. Acland (Westland Aircraft, Percival Aircraft..)
  - d) Mr. Griffith Brewer (aeronautics patent agent, balloonist, first Englishman to fly in an aeroplane—as a passenger with Wilbur Wright in 1908)
  - e) R.F.C Major D. H. Kennedy, O.B.E., F.R.Ae.S
  - f) Mr. A. E. L. Choilton
  - g) Sir Charles Richard Fairey MBE, F.R.AeS (Fairey Aviation Co., & Aeronautical engineer)
  - h) Captain Professor Geoffrey Terence Roland Hill MC, M.Sc, M.I.Mech.E., FRAeS
  - i) Mr. J. E. Hodgson, Royal Academician - Librarian And Professor, Author,
  - j) Mr. H. B. Irving,
  - k) Mr William Oke Manning, aeronautical engineer
  - l) R.A.F Major R. H. Mayo,
  - m) R.A.F Lieut.-Col. Mervyn Joseph Pius O'Gorman, CB, Royal Engineers - Aeronautical engineer / aeronautical research, Superintendant of the Royal Aircraft Factory, Farnborough, 1909-1916. Chief Engineer to the Director General of Military Aeronautics to the Air Board 1916 - 1917. (the Factory, which had no initial funding or licence to build aircraft and was therefore reliant on the donation of used aircraft for its early work)
  - n) Mr Frederick Handley Page - Graduate engineer - University College, London, 1906, CBE, FRAeS
  - o) Mr. J. Laurence Pritchard,
  - p) Major G. H. Scott,
  - q) Major T. Sir Vvll Vvvvan
  - r) Dr. H. C. Watts,
  - s) Mr. R. McKinnon Wood

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<sup>363</sup> Flight - The Aircraft Engineer & Airships, pg.996, 15 November 1928

## Notes on "Civil Aviation"

As noted & reported by Laurence Pritchard, Secretary RAeS.<sup>364</sup> <sup>365</sup>

### RAES : UK AIRCRAFT : "DATA SHEETS"

- I. ARRANGEMENTS have been made for the issue, early in 1927, of data sheets<sup>366</sup>.
- II. These sheets will contain abstracted information of use to:
  - a) ground engineers,
  - b) draughtsmen, and
  - c) all those engaged in the practical side of the industry.
- III. These data sheets will be issued at frequent intervals, and it is to be hoped that all those who wish for such information will write to the Secretary, so that those sheets for which there is a demand are printed as soon as possible.
- IV. The data sheets will be printed on an 8 by 5 in. page, convenient for notebooks, with a wide left-hand margin for insertion in the notebooks.
- V. They will enable anyone in the industry to collect together, in a convenient, condensed and usable form much of the information now scattered in various works of reference, B.E.S.A. specifications, private notebooks, and the like.
- VI. It is hoped that those who have any specialised or unpublished information of any kind which would prove useful to other members of the industry, will communicate with the Secretary, with a view to its publication.
- VII. The data sheets will be issued to all members of the society upon application. Any further information with regard to them can be obtained on. application to the Secretary - J. Laurence Pritchard, Honorary Secretary RAeS.

### ROYAL AERONAUTICAL SOCIETY "RAES" : ASSOCIATES

- I. A number of applications for membership in the newly-formed *grade(s) of "Associateship"* have been received.
- II. This new grade has been formed to enable:
  1. ground engineers, inspectors and examiners of aeronautical materials,
  2. those holding a pilot's " B " licence,
  3. those holding a navigators certificate,
  4. those who have a commissioned or permanent rank in the General Duties Branch of the Royal Air force, and
  5. those who have held a position equivalent to foreman for a period of not less than three yearsto take advantage of the facilities offered to them by the Society.

The subscription for this grade has been fixed as low as possible £1, 1s. a year, and Associates have all the usual privileges of members.

There is no entrance fee. J. Laurence Pritchard, Honorary Secretary RAeS<sup>367</sup>

### NOTES FOR THE GUIDANCE OF PERSONS WISHING TO OBTAIN PRIVATE PILOTS' LICENCES (CLASS A)

## Flight of private British flying machines within Great Britain and Northern Ireland

<sup>364</sup> Flight - The Aircraft Engineer & Airships, pg. 785, 10 November, 1927

<sup>366</sup> Flight - The Aircraft Engineer & Airships, pg. 838, 16 December 1926

<sup>367</sup> Flight - The Aircraft Engineer & Airships, pg. 227, 15 April 1926

## Notes on "Civil Aviation"

### General Conditions of Flying:

- I. A flying machine may not fly (except for the purpose of experiment or test and in accordance with certain other conditions) unless:
  - a) It has been registered and bears its nationality and registration marks and the name and address of the owner.
  - b) It has been certified as airworthy and complies with the conditions specified in its airworthiness certificate.
  - c) Its operating *personnel possess the prescribed certificates of competency and licences.*
  - d) It carries the prescribed documents and journey log •book, kept up to date in the prescribed form and manner. i
- II. 11. Registration.
  1. Application for registration must be made to the Air Ministry on C.A. Form 1 accompanied by a fee of £1 is.
  2. A diagram showing how the nationality and registration markings should be painted on the flying machine is sent out by the Air Ministry with the Certificate of Registration.
  3. These markings, with name and residence of owner, must also be inscribed on a metal plate affixed to the fuselage.
- III. In the event of change of ownership the Air Ministry must be notified and the registration lapses.
- IV. In the event of the flying machine being destroyed or permanently withdrawn from use the Air Ministry must be notified and the registration lapses.

### Certificate of Airworthiness

- I. Application for a Certificate of Airworthiness must be made to the Air Ministry on C.A. Form 3 accompanied by a fee of £5 5s. in the case of a " subsequent aircraft," i.e., a flying machine which conforms in all essential respects affecting its safety with a " type aircraft " in respect of which a Certificate of Airworthiness has been issued.
- II. Fees for " type aircraft " are higher and are based on the " tare " weight ; details are set out in Schedule VI of the Air Navigation (Consolidation) Order, 1923.
- III. Certificates of Airworthiness are normally valid for one year from date of issue and are renewable annually after inspection of the flying machine by the Aeronautical Inspection Directorate. For each renewal a fee of /5 5s. is charged.
- IV. All flying machines must carry instruments and equipment as specified in Section V of A.N.D. 3 (under amendment).
- V. Overhauls and repairs of private flying machines must be certified by licensed ground engineers, but daily certificates of safety are not required.
- VI. Certificated flying machines may be inspected by authorised representatives of the Secretary of State and the latter may cancel or suspend the certificate of airworthiness of any flying machine deemed to be unsafe.

### Prescribed Documents.

- I. The following documents must be carried in all private flying machines registered in Great Britain and Northern Ireland :
  - a) (i) Certificate of Registration.
  - b) Certificate of Airworthiness (to be kept in pocket of journey log book),
  - c) Pilot's Licence,
  - d) Journey Log Book.
- II. These log books are obtainable from the Air Ministry, price 4s. each ; they are issued only in respect of individual flying machines, and the first page of each book is completed by the Air Ministry before issue.<sup>368</sup>

## PROGRESS OF UK CIVIL AVIATION

<b>ANNUAL REPORT ON THE PERIOD APRIL 1, 1924, TO MARCH 31, 1925</b>
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- I. In the section dealing with relations with foreign countries the Report states that the States which are now parties to the International Air Navigating Convention are :
  1. Belgium,
  2. Great Britain,
  3. Canada,
  4. Australia,
  5. South Africa,
  6. New Zealand;
  7. India;
  8. Irish Free State;

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<sup>368</sup> Flight - The Aircraft Engineer & Airships, pg. 657, 08 October, 1925

9. Bulgaria;
  10. Czechoslovakia;
  11. France;
  12. Greece;
  13. Italy;
  14. Japan;
  15. Persia;
  16. Poland;
  17. Portugal;
  18. Romania;
  19. Kingdom of the Serbs, Croats and Slovenes;
  20. Siam;
  21. Uruguay.
- II. Bolivia, one of the original signatories to the Convention, is stated to have denounced the Convention with effect from August 30, 1924.
- III. During March 1924 - March 1925 the following Registrations, Licences or Certificates of airworthiness **were granted**<sup>369</sup>
- a) Pilot Licenses : 40;
  - b) Navigator Licenses : 2;
  - c) Ground engineer Licenses : 90;
  - d) Aerodrome Licenses : 130
  - e) Heavier-than-air craft registered : 80
  - f) Lighter- than-air craft registered : 2
  - g) Airworthy heavier-than-air craft : 128
  - h) Airworthy lighter-than-air craft : 1
- IV. The Report also gives the interesting information that on March 31, 1925, the following number of Registrations, Licences or Certificates of airworthiness **were current** :
- a) Pilot Licenses : 140 ;
  - b) Navigator Licenses : 3 ;
  - c) Ground engineer Licenses : 294 ;
  - d) Aerodrome Licenses : 44;
  - e) Heavier-than-air craft registered : 184;
  - f) Lighter- than-air craft registered : 7
  - g) Airworthy heavier-than-air craft : 186
  - h) Airworthy lighter-than-air craft : 1

## In Parliament (UK)

<b>R.A.F GROUND ENGINEERS' LICENSES</b>
---

Comprehension of the differences of performing maintenance work and the inspection/certification of maintenance work has not been well understood by officials in the military when comparing these duties to civilian aircraft...

- I. Sir F. Sykes on February 20 asked the Secretary of State for Air, Sir S. Hoare: "Sir, what proportion of Royal Air Force non-flying personnel have qualifications such as are required, as a condition of issue of ground engineers' licences ?"
- II. Sir S. Hoare replied: "Strict comparison (of RAF qualifications) is not practicable owing to differences between civil(ian) and service organisation. Broadly, however, the duties of the civil ground engineer are performed in the service by fitter (aero) and

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<sup>369</sup> Flight - The Aircraft Engineer & Airships, pg. 655, 08 October, 1925

## Notes on "Civil Aviation"

carpenters (rigger) of sergeants' or higher rank. There are 569 airmen of these trades of sergeants' or higher rank, and it may be taken that they are qualified at least to the standard required for a ground engineer' licence."<sup>370</sup>

### BRITAIN'S AIRWORTHY AIRCRAFT

- I. on 15 June 1922 : Maj.- Gen Seely asked the Secretary of State for Air :
1. "Sir, how many civil aircraft are now licensed by the Air Ministry as airworthy?;
  2. how many of this number are of value for war purposes?;
  3. can he give the comparable figures for the two preceding years ?
- II. Capt. Guest (R.A.F) responded: "The figures, on June 1 are as follows" :
1. Number of aircraft holding Certificates of Airworthiness, 97 (1922) ; 137 (1921) ; and 240 (1920).
  2. Number of value for War purposes (including training), 83 (1922) ; 104 (1921) ; and 86 (1920).
  3. There are probably in existence in this country at the present time considerably more than 97 airworthy aeroplanes, but owing to lack of employment and other causes, certain aeroplanes are laid up, and the owners have allowed the certificates to lapse.
  4. Though the 83 aeroplanes referred to above would be of some value for training and war purposes, it must be remembered that in this number there are no less than 28 different types of aeroplanes which reduces their military value considerably.
  5. In particular, very great difficulties would arise in maintaining and organizing the issue of the necessary spares to keep all these different types serviceable for war purposes. Therefore, all that can be said is that they would be of some slight value.<sup>371</sup>

### CIVIL AVIATION

- I. "A system is being introduced by which a pilot's licence can be:
1. endorsed,
  2. suspended; or
  3. withdrawn for acts of
    - a) neglect,
    - b) carelessness; or
    - c) dangerous flying.
- II. The work of ground engineers licensed by the Air Council:
1. Will be more closely supervised than formerly, and
  2. Further qualifications in ability to inspect and maintain instruments will shortly be demanded from them.
- III. Operating firms are being requested to report fully on all cases of:
- a. engine failure; and
  - b. engine trouble,
- and each case will be investigated by experts with a view to eliminating the causes".<sup>372</sup>

### THE REQUIREMENTS & DIFFICULTIES OF (CIVILIAN) AIR TRANSPORT

- I. "I should also like to mention the examinations for ground engineers:
- A. These are verbal examinations,
  - B. are therefore the most difficult to organise, and
  - C. from what I have seen, they have a tendency to follow that unsound policy adopted temporarily years ago in some of the Board of Trade examinations for the marine engineers' tickets—it is that of trying to ' catch ' the applicant by trick questions instead of thoroughly ascertaining his education, experience and knowledge. *(reflects the statement by one who, while having an authoritative position based on social status and ability to purchase education has*

<sup>370</sup> Flight - The Aircraft Engineer & Airships, pg. 132, 05 March, 1925

<sup>371</sup> Flight - The Aircraft Engineer & Airships, pg 363, 22 June 1922

<sup>372</sup> Flight - The Aircraft Engineer & Airships, pg 363, 22 June 1922

## Notes on "Civil Aviation"

*NOT undergone a B.O.T course of apprenticeship for the foundation of the trade and therefore is uneducated in the material / process or background relating to the questions being asked)*

D. I consider that the examination papers for the applicants for these tickets should be laid down by the committee to which I have referred (Board of Trade ?)." <sup>373 374</sup>

- II. It is pertinent to remark that after *the system of "two Services" (the British Army "RFC" and Royal Naval Air Service "RNAS") had been given an exhaustive and lengthy trial* under war conditions.
- a) we had been at war *for three-and-a-quarter years* when the change was made.
  - b) *Parliament acted on the advice of those who knew and combined the R.N.A.S. and the R.F.C. into one single and distinct Service.*
  - c) It was not until this had been done that we attained to absolute superiority over the enemy in the air.
- III. We need not go over the whole sorry story of opposing interests in the two Air Services:
- a) fighting against each other to secure machines and material in competition, or
  - b) the malign influences this competition exercised over efficiency.
- IV. Nor is there need to do more than to refer to the petty jealousies manifested between the Services - jealousies which were inseparable from the dual control which existed and which did much to impede the common task of beating the enemy.
- V. All who had anything to do with the aerial side of the War, or who followed its history from inside, know to what we refer.
- VI. The plain fact remains to refute the arguments and the diatribes of the champions of the bad old order of things that it was not until the R.A.F. was constituted that our aerial forces came on to an efficient basis and evolved a real esprit de corps peculiar to the Air Service.
- VII. In war and in peace the R.A.F. has most completely justified itself and to retrograde as Sir Percy Scott and others would apparently have us do would be a capital mistake.
- VIII. Fortunately, those who have the ultimate say in the matter realise this, and there does not appear to be any immediate danger of the reactionaries having their way.
- IX. Sir Percy Scott is certainly wrong if his utterances have been correctly reported.
- A. Taken literally, Sir Percy Scott professes to say that the Air Service was taken away from the Navy during the War. It most certainly was not taken away.
  - B. Not a machine, not a pilot, not a mechanic, was "taken away" in any true sense of the word.
  - C. Administrative matters were transferred to the Air Ministry, but command remained with the Navy and the Army just as it had been before the change and as it remains now.
  - D. What did happen was that the ruinous competition, which had been the rule before, ceased, and supplies came forward and were allotted with due regard to the requirements of both Services.
- However, there is no need to pursue the subject further. There is to be no change in the existing order of things. So much was vouchsafed by Mr. Bonar Law in the House recently, when, in reply to a question by Major Glyn as to whether representations had been made by the Admiralty and the Army Council to the effect that it is advisable to return to the separate Air Services, he stated with emphasis that the answer was "in the negative."<sup>375</sup>

### DISPOSITION OF SURPLUS AIRCRAFT AND MATERIEL

<sup>373</sup> THE REQUIREMENTS AND DIFFICULTIES OF AIR TRANSPORT paper by Colonel Frank Searle, before the Royal Aeronautical Society on November 17

<sup>374</sup> Flight 24 Nov 1921 pg 789.

<sup>375</sup> Flight - The Aircraft Engineer & Airships No. 49, Vol XII pg 1230. 02 Dec. 1920

## Notes on "Civil Aviation"

"It is hoped that *surplus aircraft and materiel* [...] *will ultimately be handed over on approved terms to a private company to operate, and the results of these experiments and the knowledge and experience obtained will be available* to any such company"<sup>376 377</sup>

### EVERYTHING WAS SACRIFICED TO OBTAIN PERFORMANCE

- I. "during the War *everything was sacrificed to obtain performance*"<sup>378</sup>
- II. cost mattered very little and durability not at all<sup>379</sup>, as a machine had a short life in any case, due to enemy action, bad aerodromes or obsolescence of types
- III. we had, at the conclusion of the War, *a number of machines and engines which, although efficient for the purposes of the moment* (war), were direct developments of their predecessors of 1914<sup>380</sup>.
- IV. *Cheapness of construction and maintenance is of first importance in a civil machine*<sup>381</sup>, and as cheapness of construction goes with simplicity, and therefore ease and rapidity, it is also of great importance for war purposes.
- V. Aircraft as the War has left them, are flimsy structures, requiring continual looking after, and it is therefore desirable to seek a system of construction which will provide a stronger and more durable machine."<sup>382</sup>

### EXAMINATION FOR AVIATION GROUND ENGINEERS

- I. Examinations of candidates desiring to become certified ground engineers<sup>383</sup> (aircraft or engines) will be held at the following centres during September :
  - 1. London, Wed. Sept. 29;
  - 2. Bristol, Tues. Sept. 21;
  - 3. Birmingham, Wed. Sept. 22 ;
  - 4. Manchester, Thurs. Sept. 23.and during October <sup>384</sup>:
  - 5. London, Wed. Oct. 13;
  - 6. Leeds, Tues. Oct. 19;
  - 7. Newcastle, Wed. Oct.20;
  - 8. Glasgow, Thurs. Oct. 21
  - 9. London, Wed. Oct. 27
- II. The examinations *may be partly written, partly oral and partly practical*. They will be based on the syllabus outlined in Section 4 of the Air Navigation Directions 1919<sup>385</sup>

<sup>376</sup> Flight - The Aircraft Engineer & Airships No. 49, Vol XII pg 1230/1227. 02 Dec. 1920

<sup>377</sup> Lyth Peter. The Empire's Airway: British Civil Aviation from 1919 to 1939. In: Revue belge de philologie et d'histoire, tome 78, fasc. 3-4, 2000. Histoire medievale, moderne et contemporaine - Middeleeuwse, moderne en hedendaagse geschiedenis. pp. 865-887. doi : 10.3406/rbph.2000.4469 [http://www.persee.fr/doc/rbph\\_0035-0818\\_2000\\_num\\_78\\_3\\_4469](http://www.persee.fr/doc/rbph_0035-0818_2000_num_78_3_4469) pg 866

<sup>378</sup> AIRCRAFT RESEARCH AND CONTEMPLATED DEVELOPMENTS, Air Vice-Marshal Sir E. L. ELLINGTON, K.C.B., C.M.G., C.B.E., Director-General of Supply and Research - Flight 28 October 1920

<sup>379</sup> AIRCRAFT RESEARCH AND CONTEMPLATED DEVELOPMENTS, Air Vice-Marshal Sir E. L. ELLINGTON, K.C.B., C.M.G., C.B.E., Director-General of Supply and Research - Flight 28 October 1920

<sup>380</sup> AIRCRAFT RESEARCH AND CONTEMPLATED DEVELOPMENTS, Air Vice-Marshal Sir E. L. ELLINGTON, K.C.B., C.M.G., C.B.E., Director-General of Supply and Research - Flight 28 October 1920

<sup>381</sup> AIRCRAFT RESEARCH AND CONTEMPLATED DEVELOPMENTS, Air Vice-Marshal Sir E. L. ELLINGTON, K.C.B., C.M.G., C.B.E., Director-General of Supply and Research - Flight 28 October 1920

<sup>382</sup> AIRCRAFT RESEARCH AND CONTEMPLATED DEVELOPMENTS, Air Vice-Marshal Sir E. L. ELLINGTON, K.C.B., C.M.G., C.B.E., Director-General of Supply and Research - Flight 28 October 1920

<sup>383</sup> Flight Sept 16, 1920

<sup>384</sup> Flight Sept 16, 1920

<sup>385</sup> Flight Sept 16, 1920



## The *Civil Aviation Branch* of the Department of National Defence, Canada

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### CANADIAN REPORT, FOR THE QUARTER ENDING SEPTEMBER 30, 1931

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- I. INCLUDED in the report, for the quarter ending September 30, 1931, issued by the Civil Aviation Branch of the Department of National Defence, Canada, are the following statistics concerning Air Mail services, etc in Canada.<sup>386</sup>
- II. During the period July 1 to September 30 the licences issued were:
  - a) private (pilot) : 41
  - b) commercial (pilot) : 39
  - c) air engineers : 41
  - d) aircraft registered : 39
  - e) air-ports licensed : 4
- III. This brings the total in force at September 30, 1931, to:
  - a) Private pilots : 271
  - b) Commercial pilots : 393
  - c) Air engineers : 406
  - d) Aircraft : 489
  - e) Air-ports : 75

## Annual Air Force Dinner

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### The 4th annual Independent Air Force Dinner (1922)

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The Rt. Hon Capt. J. E. Guest, Secretary of State for Air stated at the 4th Annual Air Force Reunion, 19 June 1922 <sup>387</sup> that:

- I. The fundamental view of British trade development. Every successful industry had been built up by healthy competition, and if Civil Aviation was ever to pay in this country, it must be on the basis of reasonable and healthy competition.
- II. *The first responsibility of the Government was to safeguard the public from avoidable risks by:*
  - A. guaranteeing the air-worthiness of aircraft;
  - B. the careful licensing of pilots;
  - C. the careful licensing of ground engineers,
  - D. satisfying themselves of the efficiency of a company before allowing it to operate [...]
- III. *The British Empire, however, was not confined to the British Isles, and had within its' boundaries and Dominions more wide stretches of territory, unbridgeable except by Air [...]*
- IV. Civil Aviation could be made a commercial success and Imperial Asset by the development of these routes. *Canada, India, Australasia, South Africa, all..."*

## Aviation Education / Aviation Schools

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### The International Correspondence Schools "I.C.S" & Aviation Courses

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- I. Before the 1st World War the International Correspondence Schools, of International Buildings, Kingsway, W .C. 2, included among the many subjects taught by post (by mail) that of "Aviation".<sup>388</sup> The textbooks used England (and Canada) were

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<sup>386</sup> Flight - The Aircraft Engineer & Airships, pg 54, 15 January, 1932

<sup>387</sup> Flight - The Aircraft Engineer & Airships, pg 360, 22 June 1922

<sup>388</sup> Flight - The Aircraft Engineer & Airships, pg 666, 09 November 1922

## Notes on "Civil Aviation"

published by the International Correspondence Schools Ltd., The Kingsway, London. The I.C.S textbooks used in North America were published by "International Textbook Company" of Scranton, PA.

- II. Among the early I.C.S. students was Mr. Robert Slack, who flew a Blériot, and later Moraine monoplanes in 1911, 1912 and 1913.
- III. Mr. Slack won a prize presented by the I.C.S., if we remember rightly, and his great practical knowledge of his machine and engine proved that the I.C.S. course was sound and practical.
- IV. Then came the War, and for some years the "Aviation course" was dropped, owing chiefly to the difficulty of keeping up to date in aviation matters.
- V. The "Aviation course" has now been entirely re-written, and has furthermore been extended very considerably. Not only so, but by subdividing the course into 7 branches, it has been possible to reduce the price for any one section.
  1. The "Aeroplane Designer's" course has been arranged to give instruction in such subjects as come within the scope of draughtsmen and designers in an aircraft design office, dealing with aerodynamical as well as structural calculations.
  2. The "Special Pilot's" course has been drawn up from information supplied by the Air Ministry to assist intending candidates for examinations for a Class "A" (Private) or Class "B" (Commercial) pilot's licence. It deals thoroughly with:
    - a) the ordinary introductory papers on arithmetic,
    - b) Background on engines;
    - c) Background on aeroplanes,
    - d) Navigation,
    - e) Meteorology, etc .
  3. The "Complete Aero Fitter's and Rigger's" course includes both aeroplanes and engines;
  4. The "Aeroplane Fitter's and Rigger's" course deals with machines only, and does not include papers on engines.
  5. The "Aero Engine Fitter's and Rigger's" course deals entirely with engines, and does not touch work in connection with the machine.
  6. Five different "Ground Engineer's" specialty courses, drawn up to help those wishing to enter the Air Ministry examinations for ground engineers in Categories A, B, C, D and E;
  7. The "Complete Aeronautical Engineering" Course covers the entire ground of "Aviation" (Pilots and Engineers)
- VI. Altogether the I.C.S. courses appear to include every phase except actual flying, and we would advise those interested to write to national International Correspondence Schools, Ltd. , Inter-Buildings, Kingsway, W .C. 2.

### The Question of "Air-Worthy" Certificates

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- I. CAPT. HERNE was fined [...] at Croydon on Saturday.
- II. Two of the charges were for carrying passengers without having a daily "airworthy" certificate as to the fitness of his machine from a licensed ground engineer.
- III. Considering that the Air Ministry charge these joy-ride and air-taxi people £10 a month for the garaging of each machine, it would appear that some arrangement could be made *whereby the A.I.D. Inspector already on the aerodrome, or a ground engineer supplied by the Air Ministry*, could inspect these machines and issue daily certificates.
- IV. The present arrangement, requiring each firm or individual to find their own ground engineers, makes it practically impossible for these small men to exist; and it must be remembered that they are a valuable asset to the air industry.<sup>389</sup>

### France's Policy in the Air

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- I. M. Flandin advocated the continuation of close working between the civil and military organisations, and went on to emphasise that *efforts should be concentrated upon the improvement of the technical side of aviation rather* than upon the increase of the matériel
- II. While he *expressed the opinion that Germany was not to be feared* in regard to the numbers of her aeroplanes, he said *that her experimental activities must be emulated* ; new laboratories should be installed, makers should be formed into groups, so as to reduce prices by co-operative buying, *and aeronautical engineers be given special encouragement in their work.*<sup>390</sup>

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<sup>389</sup> Flight August 18, 1921

<sup>390</sup> UK Under-Secretary of State for Aeronautics M. Flandin outlining the future air policy of France in a speech at a banquet held on October 9,

III. " We must attempt to hold the supremacy in the air," he said, " as England holds it on the sea, for *a nation that controls the means of transport is mistress of the world.*

## "A Complete Course of Instruction" - Ground Engineer Training

### **A COMPLETE COURSE OF INSTRUCTION FOR GROUND ENGINEERS A.B.C.D. & X LICENSES - 1937**

The authors of this course in instruction were well known and reputable- being involved in UK aeronautics and Aviation from, in some cases, the early days.

I. Published by "The New Era Publishing Co. 12 & 14 Newton St, Holborn, LONDON, W.C.2

II. Forward by H. Haselden Lewis, Air Registration Board

III. Chapter references:

- I. "A" License - "The Rigging, Maintenance and Inspection of Aircraft" by W.J.C Speller, A.F.R.Ae.S, A.I.D.<sup>391 392</sup>
- II. "B" License - "Inspection of Aircraft after Overhaul" by S.J. Norton, Assoc. M.inst.C.E & A.F.R.Ae.S
- III. "C" License - "Aero-Engines : Inspection of, Before Flight"
  - I. Part I - "C" License - "Aero-Engines : Inspection of, Before Flight" by R.F. Barlowe
  - II. Part II - "The Law relating to Civil Aviation" by A. McIsaac
- IV. "D" License - "Inspection of Aero-Engines after Overhaul"
- V. "X" License - "Electrical and Wireless Equipment of Aircraft" : Including the repair, overhaul and testing of Magnetos by S.G. Bybrow, A.M.I.E.E & A.M.I.M.E
- VI. "X" License - "Instruments" : Repair, overhaul, testing and calibration of Aircraft and Aero-Engine instruments : Adjustment, Installation and Compensation of Compasses in Aircraft by R.W. Sloley, M.A - Cambridge, B.SC.- London university & Mr. C.E Dodge (sec. 8, App'x "X" & Diagrams)

**Air Ministry Official Publications (A.P.'s)** and other required references Incorporated into "The Course":

- a. The Air Navigation Act
- b. The Air Navigation Order
- c. The Air Navigation Directions
- d. Statutory Rules & Orders - as applicable
- e. Air Ministry Pamphlet No. 34 - Instructions to Applicants for Ground Engineers Licenses & Syllabus of Examinations
- f. The Service Handbook
- g. The Airworthiness Handbook for CIVIL Aviation (A.P. No. 1208)
- h. General Instrument Equipment for aircraft (A.P. No. 1275)
- i. Vol. 1 of the Manual of Air Pilotage a.k.a the RAF's "Manual of Air Navigation Vol. 1" (A.P. No. 1234) consisting of 19 chapters including:
  - 1) substantial discussions devoted to maps and charts,
  - 2) navigational instruments,
  - 3) aircraft compasses
  - 4) compass adjustment,
  - 5) direction finding
  - 6) wireless telegraphy
  - 7) meteorology.

*Significantly, the last chapter is devoted to "Ground Organisation" and such "essential elements" as 'Notices to Airmen' and the 'Air Pilot'.*

NOTE: not referred to is Vol. 2 of the Manual of Air Pilotage (A.P. No. 1456) first issued in 1933 which was a "must have" reference as it dealt with "Systems" such as compasses and A-DF equipment.

A.P. 1234 - E - MANUAL OF AIR NAVIGATION VOLUME V - RADIO NAVIGATION AIDS

<sup>391</sup> Flight - The Aircraft Engineer & Airships, pg.35, 23 May 1935

<sup>392</sup> Flight - The Aircraft Engineer & Airships, pg.336, 1950

## Notes on "Civil Aviation"

- j. Air Ministry "Specifications" (for / of Aircraft, materials)
- k. Inspection Instructions of the Aeronautical Inspection Directorate, Air Ministry
- l. Admiralty handbook on Wireless Telegraphy
- m. Information Circulars
- n. Inspection and information Leaflets to The Airworthiness Handbook
  - a. Inspection Leaflet No. 100
  - b. Inspection Leaflet No. 410
  - c. Etc.
- o. Notices to Airmen and Ground Engineers
- p. British Standards Institute : Inspection and testing of Materials, Standards for
- q. British Standards Institute : Standards for Aircraft Materials & Components
- r. D.T.D (Director Technical Development - Air Ministry) Standard Specifications
- s. Aeroplane and Engine Constructors' technical data and type drawings

### United Kingdom Air Ministry Air Publications (AP)

The Air Almanac AP 1602  
Air Navigation Vol 1 AP 1234  
Armament Publications AP 2264A  
Blind Approach Pilot's Handbook AP 1751  
Bomb Carriers Ch 3 250 lb Container for Small Bombs AP 1664 Vol I  
Bombing Sense AM Pamphlet No. 139  
Bombs AP 1661B Vol I  
Electrical Equipment Manual AP 1095 Vol II  
Electrical and Radio Notes for Wireless Operators AP 1762  
Engineering Manual for the RAF AP 1464 Vol I  
The King's Regulations and Air Council Instructions For The RAF AP 958  
Manual of Air Force Law AP 804  
Manual of Air Pilotage AP 1234  
RAF Flying Training Manual Part I Landplanes AP 129  
RAF Maintenance AP3397  
RAF Pocket Book AP 1081  
RAF War Manual Part I Operations AP 1300  
RAF War Manual Part II Organisation & Administration (Provisional) AP 1301  
Standard Notes for Wireless Mechanics AP 1938  
Works AP 3236  
Civil Aircraft and the Law - J.M. Spaight

### CORRESPONDENCE COURSE TEXTBOOKS 1925 - 1950

The International Correspondence Schools "I.C.S" issue numerous works on "Engineering" to persons applying to their courses of correspondence. The I.C.S books are published by the International Textbook Company., Scranton, USA.

A number of these courses are used by enlisted members of the Royal Canadian Air Force to upgrade their "Formal Knowledge" in order to pass tests and exams for higher placement and to obtain Civilian Air Engineer Licenses.

While a student at the Confederation College the author was given a number of these books [by Ralph] which once belonged to Flight Sergeant Harold William Gregory S/n R/90300 - RCAF of London Ontario.

20 year old F/S Gregory, H.W took part in Operation Jubilee, the Allied attack on the German-occupied port of Dieppe on 19 August 1942. His aircraft was one of 106 allied aircraft lost that day with the loss of 60 airmen - including 13 Canadians, his body was never recovered and he remains "Missing" to this day.

## Notes on "Civil Aviation"

1. **AERODYNAMICS AND FLIGHT.** (ELEMENTARY AERODYNAMICS / THEORY OF FLIGHT.) By James Ross Allen, Book # 594B Contents: Aerodynamic Laws and Theories; Physical Principles; Effects of Air Flow; Air Flow Against Flat Plate; Wind Tunnel; Action of Air-Stream and Airfoils; Airfoil Characteristics; Influence of Airfoil Dimensions; Arrangement of Airfoils; Variable Lift Devices; Parasite Drag. Theory of Flight Contents: Equilibrium and Balance; Fundamentals of Equilibrium; Stability and Control; Types of Stability; Lateral Stability Standards; Directional Stability Standards; Control Standards; Propeller; Introduction; Propeller Theory; Propeller Effects; Airplane Performance at Sea Level; Airplane Performance at Altitudes.
2. **AIRCRAFT WOODWORK PROTECTIVE COATINGS.** (WOODWORKING TOOLS / AIRCRAFT WOODWORK / PROTECTION OF AIRPLANE PARTS / COVERING AND DOPING AIRPLANE SURFACES.) by Daniel J. Brimm, Book # 607 Contents: Use of Woodworking Tools; Hand Cutting Tools; Boring Tools; Hand Finishing Tools; Sawing Machines; Surface Machines and Sanders; Sharpening Tools; Grinding Wheels; Oilstones; Sharpening Knife-Edged Tools; Woodworking Practice. Aircraft Woodwork Contents: Wood Airplane Structures; Properties of Wood; Construction of Airplane Parts; Examples of Aircraft Woodwork. Protection of Airplane Parts Contents: Devices and Methods; Wood Surfaces; Metal Surfaces; Spray Painting of Airplane Surfaces; Spray Guns; Spray-gun Accessories; Hose and Hose Fittings; Protective Devices; Handling Spray Equipment; Troubles in Spray-Gun Operation. Covering and Doping of Airplane Surfaces Contents: Fabric and Tape; Finishing Fabric Surfaces; Inspection Before Covering; Methods of Covering; Application of Dope; Marking Coverings; Exercises in Airplane Covering.
3. **THE SLIDE RULE** by Rufus T. Strohm and Archibald Degroot. Book # 255. Contents: Construction of Slide Rules; General Features of Slide Rules; Parts of Slide Rule; Graduations of Scales; Basis of Graduation; Principles of Operation of Slide Rule; Values of Graduations; Usual Operations With Mannheim Slide Rules; Location of Decimal Point; Multiplication With Slide Rule; Division With Slide Rule; Multiplication and Division Combined; Powers and Roots; Special Uses of Mannheim Slide Rules; Mantissas of Logarithms; Trigonometric Functions; Slide Rules With Folded Scales and Log Log Scales; Folded Scales; Log Log Scales; Trigonometric Functions With Duplex Rule; Circular Slide Rule.
4. **The Airplane and its Parts** 594A by Brimm, Daniel J.
5. **Elementary Aeronautical Engineering** 594B. by Brimm, Daniel J.
6. **Aircraft Metalworking Tools** 606B, by Brimm Jr., Daniel J.
7. **Aircraft Metalwork** 606A by Brimm Jr., Daniel J.
8. **Airplane Parts and Maintenance** - #567. by F. W. Wead
9. **Airplane Instruments Maintenance** by Brimm Jr., Daniel J
10. **Airplane Instruments and Accessories Part 1** by Brimm Jr., Daniel J
11. **Airplane Instruments and Accessories Part 2;** by Brimm Jr., Daniel J
12. **Airplane Assembly and Rigging,** by Brimm Jr., Daniel J
13. **Airplane Handling and Maintenance book # 608** by Brimm Jr., Daniel J
14. Gas Engines # 293
15. Gas Engines # 294
16. Storage Batteries and Service # 136 by O. A. Witte.
17. Storage Batteries part 2 : Battery Equipment-Troubles # 137 O. A. Witte
18. Elements of Blueprint Reading
19. Shop Drawings Measurements Drilling and Appliances
20. Alternators & Ac Motors
21. Engineering Materials and Processes: Metals and Plastics by Clapp, William Howard and Donald Sherman Clark
22. Radio receivers and Servicing by J G Aceves
23. A Manual in the Testing of Materials by Tucker, Harry
24. Bench, Vise, and Floor Work; Part 1
25. Bench, Vise, and Floor Work; Part 2
26. General Properties of Materials
27. ARC-WELDING of LOW-CARBON STEEL PART 1 No. 5249A
28. ARC-WELDING of LOW-CARBON STEEL PART 2 No. 5249B
29. Inventions & Their Management 1st.ed. by Berle, Alf K. & L.Sprague de Camp
30. Geometry and Trigonometry
31. Pattern Design (International texts in mechanical engineering, C.F. Taylor . consulting editor) Hall, B. Rupert; Kiley, Henry E.
32. Geometrical drawing/elements of Projection drawing/ Drawings for Welded Parts
33. Engine Management And Installation.
34. ARC-WELDING of ALLOY STEELS and IRON.# 5250 by Kraus, R. and Lincoln, R. B.
35. Electric Ignition # 364
36. BENCH WORK, PART 1 by Roger O. Alden
37. BENCH WORK, PART 2 by Roger O. Alden

## Notes on "Civil Aviation"

38. Gas Welding and Cutting by Thum, Ernest E.
39. Cost Accounting by Reittel, Cahrles
40. Mechanics and Strength of Materials; Principles of Mechanics; Hydromechanics; Pneumatics; Strength of Materials
41. Factory Equipment by Joseph W. Roe & Charles W. Lytle
42. Strength of Materials Part 1: # 223A
43. Strength of Materials Part 2 : Testing of Materials # 223B
44. Measuring Instruments
45. Joinery in Two Part 1 1064A
46. Joinery in Two Part 2 1064B
47. The Steel Square Part 1 1066A/1066B
48. The Steel Square Part 2 1066B
49. Combustion Engine Fuels and Heat 349A
50. Combustion Engine Fuels and Heat 349B
51. Heat Combustion and Fuels; Principles of the Internal Combustion Engine # 349C by Venerdoes, J./Morrison, L.H./Baker, C.T.

Hogg cites various authoritative definitions which identify the dominant or most important characteristics of the challenged law [p. 80]:

"What is the 'matter' of a law?"

1. Laskin says it is 'a distillation of the constitutional value represented by the challenged legislation';
2. Abel says it is 'an abstract of the statute's content';
3. Lederman says it is 'the true meaning of the challenged law';
4. Mundell says it is the answer to the question, 'what in fact does the law do, and why?';
5. the courts have sometimes said that it is the 'leading feature' or 'true nature and character' of the law, but usually they have described it as 'the pith and substance' of the law.

THE AEROPLANE HANDBOOK - The AEROPLANE & GENERAL PUBLISHING, Co., Ltd. - 61, CAREY STREET, London W.C.2.  
Edited by A. J. SWINTON, (R E. , retired)

THE AEROPLANE HANDBOOK is intended to provide a manual for the use of those who are engaged in the design, manufacture and use of aircraft.

### CONTENTS

1. AEROPLANE AND AERONAUTICAL INSTRUMENTS. By CmpUin A. F. C. Pollard, R.A.F.
2. STRENGTH CALCULATIONS.
3. GENERAL THEORY. By John Cas«, M.A., A.F R.Ae S.
4. MATHEMATICS. By John Cash, M A , A.F.R.Ae.S.
5. HIGH TENSILE STEEL WIRES AND CABLES. By Jos«PH WIUOK, Dr. R.A.F.
6. ALLOWANCES FOR BENDING STEEL By Randolph F. Hall.
7. THE VIBRATIONS METHOD OF TUNING UP By Ingniri CabloMaurilio Leric.
8. AIRCRAFT TESTING.
9. WIRELESS TELEGRAPHY AS APPLIED TO AIRCRAFT. By R. D.Bangav. ,
10. SPRAY PAINTING, VARNISHING, AND DOPING. By C. L. BURDICK.-
11. DOPE. By A. J. A. Wallace Barr. i
12. PATENTS AND PATENT LAW. By Arthur HUNT.
13. SPINNING. By George H Bettinson
14. AIR SPEED INDICATORS—THE PITOT TUBE. By Winslow H.Herschsl.
15. METEOROLOGY.
16. GLUE- By Dr George F. Lull, U.S.A.
17. METRIC CONVERSION TABLES.
18. TABLES AND DATA (CONVERSION OF DEGREES TO RADIANS).

## Notes on "Civil Aviation"

- 19. PERFORMANCE- By JOHN CASE, MA, AFR A.eS.
- 20. A NOTE ON STABILITY By Captain W. Gordon Aston, A.F.R.Ae.S., A.M.I.A.E.
- 21. PROPELLERS. By E. P King, B.Sc. (Eng ), Lond. A M I.Mech E

## Definitions

### “AERONAUTICAL GROUND ENGINEER” - BRITISH, 1919

The British definition of the term “Aeronautical Ground Engineer” :- “a person licensed by the competent authority to certify that inspections, required by the regulations for the time being in force, have been made”

Privileges attached to aircraft maintenance engineer licences:

"A licensee whose licence is endorsed under Category "A" may:

- (a) before flight, certify as *airworthy OR serviceable*, any aircraft of a type endorsed on his licence under that Category;
- (b) certify that any minor repair or any replacement made to any aircraft of a type endorsed on his licence under that Category complies with the standards of airworthiness established by the Minister"

### “AIR ENGINEER” - CANADA, 1920

"a person licensed by the competent authority to certify that inspections, required by the regulations for the time being in force, have been made"

Privileges attached to aircraft maintenance engineer licences:

"A licensee whose licence is endorsed under Category "A" may:

- (a) before flight, certify as *airworthy OR serviceable*, any aircraft of a type endorsed on his licence under that Category;
- (b) certify that any minor repair or any replacement made to any aircraft of a type endorsed on his licence under that Category complies with the standards of airworthiness established by the Minister"

### “GROUND ENGINEER” - BRITISH

The British definition of the term “Ground Engineer” :- “a person licensed by the competent authority to certify that inspections, required by the regulations for the time being in force, have been made”

Privileges attached to aircraft maintenance engineer licences:

"A licensee whose licence is endorsed under Category "A" may:

- (a) before flight, certify as *airworthy OR serviceable*, any aircraft of a type endorsed on his licence under that Category;
- (b) certify that any minor repair or any replacement made to any aircraft of a type endorsed on his licence under that Category complies with the standards of airworthiness established by the Minister"

### “AIRCRAFT MAINTENANCE ENGINEER” - BRITISH, 1968

The British definition of the term “Aircraft Maintenance Engineer”<sup>393</sup> : “aircraft engineer” - “a person licensed by the competent authority to certify that inspections, required by the regulations for the time being in force, have been made”<sup>394</sup>

Privileges attached to aircraft maintenance engineer licences<sup>395</sup> :

"A licensee whose licence is endorsed under Category "A" may:

- (a) before flight, certify as *airworthy OR serviceable*, any aircraft of a type endorsed on his licence under that Category;
- (b) certify that any minor repair or any replacement made to any aircraft of a type endorsed on his licence under that Category complies with the standards of airworthiness established by the Minister"

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<sup>393</sup> Glossary of Aeronautical Terms, British Standard No. 185

<sup>394</sup> Glossary of aeronautical and astronautical terms, British Standards Institution, London 1969 - (TERMIUM Plus - The Government of Canada's terminology and linguistic data bank, 2018)

<sup>395</sup> Air Navigation Orders, Civil Aviation Branch, Ottawa Canada, 1968 (TERMIUM Plus - The Government of Canada's terminology and linguistic data bank, 2018)



### "AIRCRAFT MAINTENANCE ENGINEER" - CANADA, 1968

The British definition of the term "Aircraft Maintenance Engineer"<sup>396</sup> : "aircraft engineer" - "a person licensed by the competent authority to certify that inspections, required by the regulations for the time being in force, have been made"<sup>397</sup>

Privileges attached to aircraft maintenance engineer licences<sup>398</sup> :

"A licensee whose licence is endorsed under Category "A" may:

- (a) before flight, certify as **airworthy OR serviceable**, any aircraft of a type endorsed on his licence under that Category;
- (b) certify that any minor repair or any replacement made to any aircraft of a type endorsed on his licence under that Category complies with the standards of airworthiness established by the Minister"

### "AIRCRAFT MAINTENANCE ENGINEERING" - AMERICAN

The American terminology for aircraft maintenance engineering<sup>399</sup> from U.S Military terminology. The U.S Air Force **Aircraft Maintenance Engineering** course of study for **Aircraft Maintenance Officer** cadets in University ROTC training squadrons. The information contained within the course was classified "RESTRICTED" as it contained "information affecting the National Defense of the United States within the meaning of the "Espionage Ac, 50 U.S.C 31 and 32 - as amended. The transmission or revelation of its contents in any manner to unauthorised persons is prohibited by Law"

**NOTE:** The US Air Force position of "Air Inspector" is authorised under AF regulation 123-1, to ensure the highest possible standards of efficiency, safety and economy. The Inspectors are appointed and work with maintenance staff to make sure that maintenance, supply and other activities are being accomplished correctly. The Air Inspectors report to the Wing Inspector General - who reports to the Wing Commander. The Wing Inspector General has final over-all inspection responsibilities on the wing base. The staff of the Wing Inspector General comprises 3 main branches:-

- 1. The Air Inspector - who appoints assistant inspectors who accomplish detailed inspections of all activities and equipment and report on what they find.
- 2. Flight Safety -
- 3. The Air Provost Marshal -

### U.S. INTERPRETATION OF THE TERM "AIRWORTHY"

United States FAA interpretation of the term "AIRWORTHY"<sup>400</sup> , there are 2 conditions which must be met [complied with] :

**1. The aircraft must conform to its type certificate.**

- a. When aircraft configuration and the components installed are consistent with drawings, specifications, and other data that are part of the type certificate (T/C), and include any supplemental T/C and field approval alterations incorporated into the aircraft.

**2. The aircraft must be in condition for safe operation.**

- a. Aircraft, relative to wear and deterioration i.e., corrosion, fluid leaks, tire wear, window delimitation/crazing [...]

**NOTES:**

*If one of these conditions is not met, the aircraft **IS NOT** airworthy = "un-air-worthy"*

*If both of these conditions are not met, the aircraft **IS NOT** airworthy = "un-air-worthy"*

### "INSTRUCTIONS FOR CONTINUED AIRWORTHINESS"

<sup>396</sup> Glossary of Aeronautical Terms, British Standard No. 185

<sup>397</sup> Glossary of aeronautical and astronautical terms, British Standards Institution, London 1969 - (TERMIUM Plus - The Government of Canada's terminology and linguistic data bank, 2018)

<sup>398</sup> Air Navigation Orders, Civil Aviation Branch, Ottawa Canada, 1968 (TERMIUM Plus - The Government of Canada's terminology and linguistic data bank, 2018)

<sup>399</sup> Continental Air Command (ConAC) manual # 50-9, 1949. (superseding ConAC manual 50-66-1)

<sup>400</sup> Section 44704(d) of 49 U.S.C

## Notes on “Civil Aviation”

“*Instructions for Continued Airworthiness*” (ICA) means “all instructions published by the holder of the design approval for an aeronautical product that relate to “:

1. the **inspection** of that product.,
2. the **testing** of that product.,
3. the **repair** of that product.,
4. the **removal** of that product. and
5. the **replacement** of that product.

NOTE that:

1. ICA's **ALSO include** maintenance manuals and equivalent documents that were published *before the term* “instructions for continuing airworthiness” first came into use in 1981.
2. Supplemental ICAs *for a design change* not only cover:
  1. the items installed by the design change,
  2. **but also** those:
    1. *systems of the aircraft* affected by the change **and** the existing ICA pertaining to the affected areas,
    2. *parts of the aircraft* affected by the change **and** the existing ICA pertaining to the affected areas,
    3. *structure of the aircraft* affected by the change **and** the existing ICA pertaining to the affected areas and
    4. *areas of the aircraft* affected by the change **and** the existing ICA pertaining to the affected areas.
3. Unaffected areas need not be addressed. **However,**
4. the submitted supplemental ICA must include all items potentially affected by the installation, even where no actual change is required.<sup>401</sup>

<b>“CERTIFICATION MAINTENANCE REQUIREMENTS”</b>
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**Certification Maintenance Requirements** (CMR) are:

“required inspections or maintenance tasks that are part of the ICA and fall within the definition of Airworthiness Limitations.”

They are tasks performed at certain times to detect or correct safety significant latent failures (failures not known to the crew). These latent failures, combined with one or more other specific failures or events, can cause hazardous or catastrophic failures. CMR are identified within the type certification process and usually developed as an alternative means to meet compliance requirements when the actual design in its own right cannot meet the design requirements. See FAA Advisory Circular AC25-19, Certification Maintenance Requirements, for additional information.

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<sup>401</sup> Martin Eley, Director, Aircraft Certification : Transport Canada, Maintenance and Manufacturing Staff Instructions (MSI) # 53, 06 January 2006

# Abbreviations

<b>BRITISH ABBREVIATIONS - WW1</b>
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App. = Appointed, Appointment.  
Olrv. = Object.  
Repr. = Representing.  
Ref. = Reference.  
Diss. — Dissolution.  
A.A.C. Aeronautics Advisory Committee.  
A.B. 2nd Air Board, established Dec. 1916.  
A.C. Army Council.  
A.C.(S) Advisory Committee to the Committee and Department of Scientific and Industrial Research.  
Adm. Admiralty.  
A.E.U. Amalgamated Engineering Union.  
A.M. Air Ministry.  
B.E. Board of Education.  
B.M.A. British Medical Association.  
B.T. Board of Trade (heading—Trade, Board of).  
C.C.B. Cotton Control Board.  
Cd. Command Papers, series to 1918 inclusive (presented to the House of Commons by the Command of his Majesty).  
F.O. Foreign Office.  
F.P.D. Food Production Department (Board of Agriculture).  
G.B. Great Britain.  
G.I. Government of India.  
Hall. Dr. Hubert Hall, Litt.D., F.S.A., British Archives and the History of the World War, in the Carnegie Endowments Social and Industrial History of the World War, British Series.  
H.C. House of Commons.<sup>1</sup>  
H.C. No. (with date) refers to papers in the annual series of Accounts and Tapers  
• ordered to be printed by the House of Commons.  
ILL. House of Lords.  
H.M.F. His Majesty's Forces.  
H.M.S.O. Stationery Office unnumbered publications.  
ALS.A.(s)'- Military Service Act(s).  
ALT. Ministry of Transport.  
M.W.A.(s) Munitions of War Act(s).  
PC. Privy Council.  
P.M. Prime Minister.  
P.O. Post Office.  
q.v. Quo vide, i.e. see (reference).  
R.A.C. Advisory Council to Ministry of Reconstruction.  
R.A.F. Royal Air Force.  
R.A.M.C. Royal Army Medical Corps.  
R.C. Reconstruction Committee.  
R.E.C. Railway Executive Committee.  
R.F.C. Royal Flying Corps.  
U.K. United Kingdom.  
U.S.A. United States of America.  
W.A.E.C.(s) War Agricultural Executive (County) Committee(s).  
W.C.B. Wool Textile Production Board of Control.  
W.E.A. Workers' Educational Association.  
W.M.V. War Muniton Volunteers.  
W.O. War Office.  
W.P.C.(s) Local War Pension Committee(s).

W.T.D. War Trade Department.

AIRCRAFT, ADMIRALTY EXPENDITURE IX AMERICA.—In II. C.  
Nos. 83, &C, 1919, p. xv, reference is made to two Committees of Inquiry  
into Admiralty purchases of aeronautical supplies from an American firm.  
AIR BOARD : AIR, JOINT, COMMITTEE. — See A.M., W.O.  
AIR JOINT WAR COMMITTEE. — See W.O.  
ARC WELDING. — See Welding.  
AVIATION, BRITISH COMMISSION. — See M.M.

## The “AIR BOARD”

(LATER THE AIR MINISTRY - INCLUDING THE AERONAUTICS ADVISORY COMMITTEE)

The first Air Board, established by the Cabinet in May 1916 (see under War Office), was a joint Advisory Body to the War Office and the Admiralty.

The existence of a separate Department for the Air commenced with the establishment of the Second Air Board in December 1916 under a President and Parliamentary Secretary by the New Ministries and Secretaries Act, 1916 (6 & 7 Geo. V, c. 68), to:

1. secure and maintain an adequate supply of aircraft
2. be responsible for principles of aircraft - aeronautical design,
3. allocation of supplies between military and naval services.

The organization of actual manufacture (of aircraft, Engines, accessories and A.G.S parts) was transferred to the Ministry of Munitions, who were represented on the Board.

The AIR Board contained representatives of:

- A. Parliament,
- B. the Admiralty,
- C. the War Office,
- D. the Ministry of Munitions and
- E. various experts.

By the summer of 1917, the possibility of a surplus of aircraft over immediate requirements rendered further measures necessary to secure its most efficient utilization, and especially the provision of an Air War Staff for the Board.

Consequently, by the Air Force (Constitution) Act of Nov. 1917, the Air Ministry replaced the Air Board, and an Air Council was constituted on 2nd Jan. 1918, on similar lines to the Army Council. The Air Council included representatives of the Admiralty, War Office, and Ministry of Munitions. This body was entrusted with the duties of organizing a definite Air Force, the necessary powers being gradually transferred from the Admiralty and the War Office.

The Air Minister received the status of a Secretary of State.

The Ministry was established as a Permanent Department.

The Aeronautics Advisory Committee, established 1909, reported direct to the Prime Minister, until establishment of the AIR Ministry, when it then reported to the Air Council.

In Nov. 1919, the Meteorological Office (pre-war body) was transferred to the Ministry, the Meteorological Committee being reconstituted (see Cmd. 800, p. 7). References. Public General Acts, 1916, 1917-18 ; Cd. 9005, pp. 57-63.

ABBREVIATIONS USED:

A.M. = Air Ministry.

A.B. = Second Air Board.

A.A.C. = Aeronautics Advisory Committee.

N.P.L. = National Physical Laboratory.

R.A.F. = Royal Air Force.

R.F.C. = Royal Flying Corps.

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### ACCIDENTS INVESTIGATION COMMITTEE.

App. by A.M., Jan.

1918. Obj. To advise Accident Department of A.M. on accidents and investigations concerning them. Repr. A.A.C. and other experts. Ref. Cd. 9145, pp. 12-13 ; Cmd. 448, pp. 23-4. Possibly Permanent.

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### ADHESIVES

See S.I.R.

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### AERIAL OPERATIONS COMMITTEE.

See Cabinet under Priorities, War, Committee.

## AERODYNAMICS

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See AERONAUTICAL RESEARCH COMMITTEE

## AERONAUTICAL RESEARCH COMMITTEE

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App. by A.M., on recommendation of Education and Research, Aeronautical, Committee (q. v.), in 1920. Obj. To take over, with extended powers, the functions of the A.A.C. Repr. Presumably, as with A.A.C., A.M., Royal Society, scientists, engineers, &c. Ref. Cmd. 1120, pp. 4, 5. Permanent Body. (The Committee was to act with appropriate Sub-Committees.)

## AERONAUTICS ADVISORY TECHNICAL SUB-COMMITTEES

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App. by A.A.C. during the War, the Sub-Committees, though they partly arose from the normal work of the A.A.C, being actually appointed as a result of the War. Obj. To advise on special matters connected with various technical and engineering problems of aviation. Repr. A.M., A.A.C, Army, Navy, N.P.L., Royal Aircraft Establishments, Aeronautical Inspection Department, experts. Ref. Cd. 8629, p. 7 ; Cmd. 488, pp. 6, 11, 16, 18, 19, 20 ; Cmd. 1458, pp. 4, 5. Apparently Permanent Bodies.

The following Sub-Committees were appointed :

- A. Aerodynamics (1917 or 1918),
- B. Aeronautics (1916 or 1917),
- C. Airships and Kite Balloons (Aug. 1917),
- D. Engine, Internal Combustion Problems (Feb. 1917),
- E. Light Alloys (about Dec. 1917),
- F. Meteorology (Aug. 1918),
- G. Materials and Chemistry (1919 or earlier),
- H. Research, Co-ordination of Theory and Practice (1918),
- I. Scale Effects (1917).

Certain other Sub-Committees are dealt with below.

## AIR CONFERENCE

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Held at Guildhall, London, 12th-14th Oct. 1920. Obj. General discussion of problems of military and civilian aviation. Repr. A.M., K.A.I.. Royal Society and various aeronautical and constructive societies, manufacturers, scientists. Ref. Cmd. 1157. The Conference passed a resolution in favour of holding Annual Conferences, and a Second Conference was held, Feb. 1922 (see Cmd. 1619).

## AIR-SCREW DESIGN COMMITTEE

---

App. by A.M. early in 1918. Obj. To investigate questions of air-screw design. Repr. N.P.L., experts. Ref. Cd. 9145, p. 8. Diss. Possibly replaced in 1919 by panel of Aerodynamics Sub-Committee (see under Aeronautics Advisory Technical Subcommittees.)

## AIRSHIPS.

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See under Aeronautics Advisory.

## AIR TRANSPORT SUB-COMMITTEE

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App. by Aeronautical Research Committee, in 1922 or 1923. Obj. To consider scientific and technical problems of Imperial Air Mail routes and act as co-ordinating body between Research Committee and Civil Aviation Department. Repr. These two bodies, Research Directorate. Royal Society, scientists. Ref. Aeronautical Research Committee's Report for 1922-8 (H.M.S.O., 1923:3)! Still in existence, end 1928.

## Notes on "Civil Aviation"

AIR. — See also Imperial Air Communications below. Cabinet, and W.O.

### ALLOYS RESEARCH COMMITTEE

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A private Committee appointed by the Institute of Mechanical Engineers co-operating with Light Alloys Sub-Committee (see under Aeronautics Advisory Technical Sub-Committees).

Ref. Cmd. 488, p. 18.

### ALUMINIUM CORROSION. See S.I.K

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### AMERICAN AVIATION MISSION

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App. by U.S.A. Government in winter of 1918-19. Obj. To investigate military and civil uses of aviation in England, France, and Italy. Repr. U.S.A. War Departments and manufacturers. Ref. Cmd. 384. Diss. July-Aug. 1919.

### AVIATION, BRITISH COMMISSION IN PARIS.

—

Obj. To make contracts for aeroplanes and engines. See H.C. Nos. 83 etc., 1919, p. xv.  
For Aviation, see also Cabinet.

### BALLOONS.

—

See Kite Balloons.

### CHEMISTRY.

—

See under Aeronautics Advisory.

### CIVIL AERIAL TRANSPORT COMMITTEE

---

by B.A., April 1917.

Obj. To report upon possible post-war development of civil and commercial aviation and post-war uses of surplus aircraft and personnel of R.A.F.  
Repr. Parliament, prominent public men, various Government Departments, Meteorological Office, Dominions and Indian Governments, Aircraft and Aero-engine Manufacturers, Labour, aircraft experts. Ref. Cd. 8916. Diss. Report signed May, issued Dec, 1918.

(N.B. The Committee divided the inquiry between five Sub-Committees on Business Questions relating to Manufacture, Labour, Law and Policy, Research and Education, Technical Questions. See Cd. 9005, p. G4.)

### CIVIL AVIATION ADVISORY COMMITTEE AND (LATER) BOARD.

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—App. by A.M., Feb.-May 1919. Obj. To advise the Civil Aviation Department (q. v.) on policy and methods of assisting civil aviation. Repr. A.M., W.O., manufacturers, insurance, flying and scientific experts. Ref. Cmd. 449, 770. Diss. Replaced in 1922 by permanent Civil Aviation Advisory Board with similar reference and wider representation (see Cmd. 1739).

### CIVIL AVIATION DEPARTMENT

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4 ^ . by the Government through  
A.M., Feb. 1919. Obj. To develop civilian aviation, including transition from war to peace flying. Repr. Official and expert. Ref. Cmd. 418, p. 2.

Permanent Department.

#### COMMISSIONS BOARD (R.F.C.).

---

App. to select candidates for commissions  
in R.F.C. Ref. Cd. 8825, p. 80. Other details not given.

#### COMPETITIONS COMMITTEE.

App. by A.M., possibly in conjunction  
with aircraft industry, late in 1919. Obj. To draw up rules for competitions,  
with object of furthering safety and comfort of air travel. Repr. A.M. and  
aircraft industry, with expert assistance. Ref. Cmd. 800, p. 12. Diss.  
Early 1920.

#### CONTRACTS FOR CLOTHING, COURT OF INQUIRY

---

by Air  
Council, Aug. 1919. Obj. To investigate various allegations as to contracts  
for Women's Royal Air Force. Repr. A.M., R.A.F., Women's Royal Air  
Force. Ref. Cmd. 347. Diss. Aug. 1919. See also Tre.

#### DESIGN.

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—  
See Air-screw Design, and Aeronautics Advisory.

#### EDUCATION AND RESEARCH, AERONAUTICS, COMMITTEE

---

App. by A.M., Oct. 1918, with revision of reference in 1919. Obj. To  
report upon organization of aeronautical education and research after the  
war and (later) upon decisions of Government in these matters. Repr. A.M., S.I.K., N.P.L., Imperial College of Science, Science  
Museum, aircraft  
manufacturers, scientists. Ref. Cmd. 554. Diss. Dec. 1919.

#### EDUCATION, ARMY, IMPERIAL

---

See W.O. EDUCATION. See also under Civil Aerial Transport Committee.

#### ELECTRIFICATION.

---

See Kite Ralloons.

#### ENGINE.

---

See Aeronautics Advisory.

#### FIREFIRE PREVENTION SUB-COMMITTEE.

—  
App. by A.A.C. in 1919.  
Obj. To consider measures to minimize risks of fire on aircraft, Repr. A.M.,  
A.A.C., R.A.F., Royal Society, scientists. Ref. Cmd. 1120, pp. 4, 13.  
IMPERIAL AIR COMMUNICATIONS COMMITTEE.

—  
App. by special  
Conference of Premiers of the Empire prior to Imperial Conference of  
June-Aug. 1921. Obj. To report upon cost of providing imperial service  
of airships and aeroplanes. Repr. A.M., CO., In.O., Tre., Governments of



## Notes on "Civil Aviation"

Dominions. Ref. Cmd. 1474, pp. 45-55. Diss. July, 1921.

### INFORMATION AFFECTING INSURANCE COMMITTEE.

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—

App. by  
Conference held at A.M. with representatives of aviation and insurance, Jan. 1921. Obj. To consider procedure and responsibility for collecting and disseminating information. Repr. A.M. Society of Aircraft Constructors, Lloyds. Ref. Cmd. 1342, p. 12.

### INSTITUTES

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See W.O.

### INTER-ALLIED AERONAUTICAL COMMISSION OF CONTROL.

---

See Cmd. 1073, pp. 19, 20. App. by Allied Powers jointly, in 1919 or 1920.  
to carry out aircraft provisions of Peace Treaties. Other details lacking.

### INTERNATIONAL COMMISSION ON AERIAL NAVIGATION.

---

App. in 1922 by Governments concerned in International Air Convention arranged by Peace Conference. Obj. To secure the carrying out of the Convention. Repr. The Governments concerned. Ref. P.G.A.. 1920: Cmd. 1559. J). 5. Permanent Body.

### [NTERNATIONAL RADIO COMMUNICATION TECHNICAL COMMITTEE.

---

///\* by chief Allied Governments between Mar. and Sept.  
1921. Obj. To deal with technical problems in connexion with International  
Radio Convention. Repr. Technical experts of countries represented. Ref.  
Cmd. 1559, p. 11.

### INT'L RADIO CONVENTION. GOVERNMENT DEPARTMENTAL CMTE.

---

App. apparently by Committee of Imperial Defence in 1919. Obj. To prepare British "scheme" (Programme) for such a Convention.  
Repr. Presumably Government Departments concerned, and possibly others. Ref. Cmd. 800, p. 6. Diss. During 1920.

### INTERNATIONAL SUB-COMMISSION ON AERIAL NAVIGATION.

---

App. by Peace Conference in 1919. Obj. To draw up "scheme" (Programme) for International Convention for the Regulation of  
International Aerial Navigation. Repr. Allied and Associated States. Ref. II. C, No. 266, 1919. Diss. Reported during 1919.

### INVENTIONS, AIR, COMMITTEE.

---

App. by A.R., Aug. 1917. Obj. To  
examine all inventions relating to heavier-than-air craft and develop and operate suitable ones. Repr. A.B., A.A.C., Adm., W.O.,  
R.A.F., M.M.,  
N.P.L., scientific experts. Ref. Cd. 9145, pp. 11, 12; Cmd. 488, p. 23.

### KITE BALLOONS, ELECTRIFICATION, COMMITTEE.

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—

App. by  
A.A.C. in 1919. Obj. To report upon means of protecting kite balloons  
from damage caused by atmospheric electrical discharges. Repr. A.M.,  
A.A.C., R.A.F., Royal Society, scientists. Ref. Cmd. 1120, p. 4.

#### KITE BALLOONS.

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—  
See also Aeronautics Advisory Technical Sub-Committees.

#### LOAD FACTORS SUB-COMMITTEE.

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—  
App. by A.A.C. at request of  
A.M., Oct. 1919. Obj. To prepare rules for load factors of civil aircraft and  
grant of certificates of air worthiness. Repr. A.M.. A.A.C. Royal Aeronautical  
Societv, Society of British Aircraft Constructors. Ref. Cmd. 1120,  
pp. 4, 11.

#### MEDICAL ADMINISTRATION COMMITTEE.

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— ^ ;, by A.B.. after  
establishment of separate medical air service, in 1917. Obj. To advise on  
administration of service. Repr. A.B., M.R.C, medical and other experts.  
Ref. Cd. 8981, p. 63. Diss. 1918 or 1919.

#### MEDICAL (CIVIL AVIATION). INTER-ALLIED, SUB-COMMITTEE.-

---

App. in 1921 to annual Anglo-Franco-Belgian Conferences on Civil Aviation  
by Governments concerned. Obj. To investigate fatigue and other medical  
problems, as affecting civil pilots. Repr. Medical experts of the three  
Countries. Ref. Cmd. 1559, p. 14. Presumably more or less Permanent.

#### MEDICAL INVESTIGATION, AIR. COMMITTEE.

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—  
App. by A.B.. in  
consultation with M.R.C, in 1917. Obj. To advise generally on medical  
aspects of aeronautics, co-ordinate investigations, and circulate information.  
Repr. A.B., M.R.C, W.O., medical experts, scientific research, with  
correspondents in France. Ref. Cd. 8981, pp. 62, 77.  
(N.B. A Medical Research Committee, referred to in Cd. 9005, p. 63, as  
appointed to investigate physiological and similar problems of flying at  
high altitudes and disabilities specially affecting flying men, may be the  
same body.)

#### MEDICAL SERVICES, AIR, ADVISORY COMMITTEE

---

—./^, by A.B.  
in 1917. Obj. To advise upon best medical organization for war service.  
Repr. A.B., M.R.C, medical and other experts. Ref. Cd. 8981, p. 62.

#### METEOROLOGY.

---

—  
See Heading to Section and Aeronautics Advisory  
Technical Sub-Committees.

#### MUSICAL, AIR FORCE, DIRECTORATE.

---

—  
App. by A.M. in 1918. Obj.

## Notes on "Civil Aviation"

To provide music for R.A.F., and establish and administer School of Music for training musicians. Repr. Musicians. Ref. Cmd. 325, p. 100. School intended to be permanent.

### NAVIGATIONAL INSTRUMENTS COMMITTEE.

---

—  
App. by A.M. in 1920  
or 1921. Obj. To report generally upon subject with view to issue of directions by A.M. Repr. A.M., aircraft industries, insurance. Ref. Cmd. 1559, p. 6. Diss. 1921.

### ORGANIZATION, AIR, COMMITTEE.

---

App. by War Cabinet, Aug. 1917.  
Obj. To work out a "scheme" (Programme) to give effect to Cabinet's decision to establish A.M. Repr. War Cabinet, A.B., Adm., Tre., W.O. Ref. Cd. 9005, p. 59.  
Diss. By Nov. 1917.

### OXYGEN SUPPLY FOR FLYING MEN, INVESTIGATION COMMITTEE.

---

—  
App. by A.B. in 1917. Obj. To study supply of oxygen to flying men. Repr. Medical and other experts. Ref. Cd. 8825, p. 79.  
RESEARCH.-

—  
See Aeronautical Advisory Technical Sub-Committees,  
Civil Aerial Transport, Education, Medical Investigation.

### STAFFS INVESTIGATION COMMITTEE.

---

—  
App. by A.M. in 1919.  
Obj. To report on reductions of staff and redistribution of duties. Repr. Chief Departments of A.M. Ref. H.C., No. 168, 1919, p. 6.

### STORES ACCOUNTS (AIR MINISTRY) COMMITTEE.

---

— ^, apparently  
l>v A.M. in 1920. Obj. To prepare improved system of store accounts for A.M. Repr. Not stated. Ref. H.C., No. 321, 1920, p. xiv.

### TECHNICAL.

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—  
See Aeronautics Advisory, and Civil Aerial Transport.

## British Ministry of Munitions (of War)

The Ministry of Munitions was established by the Ministry of Munitions Act, 1915 (5 & 6 Geo. V. c. 51) of 9th June 1915, under a Minister and Parliamentary Secretary and (later) Secretaries. It absorbed the Armaments Output Department of the War Office and various Committees.

## Notes on "Civil Aviation"

The object of the Ministry was to organize generally the output of munitions of war ; and the scope of its work was largely increased by transfers from other Departments and by the taking over of the Royal Arsenals. The Ministry was established for the period of the War. and not more than twelve months after its conclusion. See Public General Acts, 1915.

At the close of the War the Ministry of Munitions had sixty or more Departments, divided into ten groups:

- (1) Secretariat, including Priority, Requirements, Statistics, Demobilization and Resettlement. &c. ;
- (2) Finance, including Contracts. Factory Audit, Costs, &c. ;
- (3) Design, including Inspection;
- (4) Steel and Iron;
- (5) Materials, including Non- Ferrous Metals, Railway Materials, Optical Munitions, Potash, &c. ;
- (6) Explosives, including Oils and Chemical Warfare ;
- (7) Ordnance ;
- (8) Warfare, including Mechanical Warfare, Trench Warfare. Mechanical Transport, &c. ;
- (9) Aircraft ;
- (10) Labour.

After the Armistice proposals for re-organizing the Ministry as a Ministry of Supply were considered, but subsequently abandoned. It was decided by the Cabinet that the Ministry should cease as a purchasing department in Mar. 1920 (see H.C.. Nos. 100 &c., 1920, p. xx). This decision does not appear to have been carried out ; but the Ministry was subsequently wound up by the end of Mar. 1921, when the Disposals and Liquidation Commission (see below) took over its remaining functions (see H.C., No. 102. 1921, p. 18).

### ABBREVIATION'S

M.M. = Ministry of Munitions.

M.\Y.A.(s) = Munitions of War Act(s). The date after the letters M.W.A. indicates an Act of a particular year.

### ACCOUNTANTS, JOINT COMMITTEE.

—

App. jointly by M.M., Adm.,

W.O., in 1917 or earlier. Obj. To assist the Departments in systematizing costs. Repr. Accountants. Ref. H.C., No. 132, 1918, p. 15.

ACCOUNTS LIQUIDATION COMMITTEE.—^, by M.M.. under powers delegated by Tre., at end of 1919. Obj. To co-ordinate and expedite liquidation and settle disputes. Repr. Mainly Financial Officers of M.M. Ref. Cmd. 1055, p. 13 ; H.C., No. 97, 1919, p. 23. Diss. Not later than Mar. 1921.

(An Aircraft Production Sub-Committee was appointed by this Committee.)

ADVISORY COUNCIL. MUNITIONS.

—

See under Munitions.

AGRICULTURAL MACHINERY ADVISORY COMMITTEE.

—

App.

jointly by M.M., B.A., and M.F., at instance of M.M., Jan. 1917. Obj. To advise Agricultural Machinery Branch upon control of manufacture of machinery and implements. Repr. M.M., B.A., B.A.(Sc), D.A.T.I., M.F., agricultural machinery trade. Ref. J.B.A., Jan. 1917; B.T.J. , 11th Jan. 1917.

### AGRICULTURAL MACHINERY BRANCH.

—

App. by M.M. jointly

with B.A.,and M.F., Jan. 1917. Obj. To control manufacture of agricultural machinery and implements (control of distribution and use remaining with B.A.). Repr. Official and expert. Ref. B.T.J. , 11th Jan. 1917.

AIRCRAFT COMMITTEE, INTER ALLIED.—^ under Munitions Council. Inter Allied.

AIRCRAFT DISPOSALS COMPANY.—Formed to carry out disposal of

## Notes on "Civil Aviation"

surplus aircraft and aeronautical effects purchased from Disposals Board (see Cmd. 800, p. 11).

AIRCRAFT PRODUCTION. See under Accounts Liquidation above.

AIRCRAFT. See also Aviation.

ALCOHOL FOR MOTOR FUEL, INTER-DEPARTMENTAL COMMITTEE.

App. by Petroleum Executive (q. v.), Oct. 1918. Obj. To report generally upon manufacture and use of motor fuel from alcohol. Repr. Petroleum Executive, various Government Departments, motor users, oil companies, chemical research. Ref. Cmd. 218. Diss. June 1919.

ALCOHOL SUPPLIES COMMITTEE.

—

App. by M.M. at beginning of 1917. Obj. To advise M.M. on means of securing adequate supplies for war purposes and essential industries. Repr. M.M., B.A., B.T., Board of Customs and Excise, distilleries, rectifiers, methylenes, blenders, merchants. Ref. B.T.J., 4th Jan. 1917.

ALLOY STEEL. SHEFFIELD. COMMITTEE. App. by the Government in 1918 or earlier. Obj. To develop production of alloy steel for war purposes. Repr. Manufacturers, experts. Ref. Cmd. 325. p. 114.

AMMONIA EXECUTIVE COMMITTEE.— App. by M.M. after consultation with Nitrogen Products Committee (q.v.), Mar. 1917. Obj. To take necessary action to develop production of ammonia, &c., and provide plant, on lines laid down by Nitrogen Committee. Repr. M.M., W.O., technical engineers, explosives and other experts. Ref. Cmd. 482. p. 141. (See also Nitrogen, Synthetic Compounds.)

ARBITRATION TRIBUNAL, SPECIAL (MEN'S WAGES).

—

App. by M.M. Mar. 1915, under M.W.A., 1916. Obj. To advise M.M. on issue of directions as to wages of semi-skilled and unskilled men on munitions work, and deal with trade disputes referred to them under M.W.A.'s. Repr. Legal Profession. M.M., employers. T.U.'s of skilled and unskilled workers. Ref. P.G.A., 1914-16; Cole, p. 104; II. C. No. 185. 1918. pp. 19, 20. Diss. Had very few cases and appears soon to have fallen into abeyance.

ARBITRATION TRIBUNAL, SPECIAL (12 PERCENT. WAS BONUS).

The Committee on Production (see B.T.) was appointed as the Special Tribunal for dealing with disputes relating to the bonus, at end of Dec. 1917 under M.W.A., 1917. See Cole. p. 171; B.T.J., 14th Feb. 1918, p. 192.

ARBITRATION TRIBUNAL, SPECIAL (WOMEN'S WAGES). -App.

by M.M. Mar. 1915, under M.W.A., 1916. and reconstituted, in view of increased work. Oct. 1917. Obj. To advise M.M. on issue of directions as to women's wages on munitions work, and deal with trade disputes referred to them under M.W.A.'s. Repr. Legal Profession, B.T., employers and T.U.'s, women. Ref. P.G.A., 1914-16; L.G., July 1916, p. 265; Cole, pp. 84-5. Diss. Replaced after close of war by Interim Court of Arbitration (see M.L.).

ARMAMENTS OUTPUT COMMITTEE, (LATER) DEPARTMENT-

See W.O. This organization formed nucleus of M.M.

ARMAMENTS OUTPUT COMMITTEES, LOCAL.

—

App. under auspices of W.O. in April and May 1915. by local employers and T.U.'s, beginning with North-East Coast, 9th April, and taken over by M.M. Obj. To organize and develop generally by joint action munitions production in their areas. Repr. Employers and T.U.'s concerned. Ref. Cole, pp. 75-6, 124. Diss.

## Notes on "Civil Aviation"

Fell into abeyance by winter of 1915-16, being replaced sometimes by Boards of Management. District (q.v.).  
ARMY RESERVE MUNITIONS WORKERS.

—  
App. by. or by arrangement with, M.M. early in 1917. Obj. To secure necessary supplies of unskilled labour of military age for munitions work, subject to liability to recall to military service. Repr. Unskilled men of military age. Ref. Cole, pp. 136-7. Diss. Close of war.  
AVIATION, BRITISH. COMMISSION. App. either by M.M. or Adm. in 1917 or earlier, in Paris. Obj. To make contracts for aeroplanes and engines in France. Repr. Presumably expert. Ref. H.C., Nos. 83 &c, 1919, p. xv.  
BALFOUR-MACASSEY COMMISSION.

—  
See Clyde Munition Workers.  
BILLETING BOARD. CENTRAL.

—  
App. by M.M.. under Billeting of Civilians Act, in summer of 1917. Obj. To organize provision of billets for persons engaged on work of national importance. Repr. Government Departments concerned, and other members appointed by M.M., including housing experts and women. Ref. P.G.A., 1917-18.  
BILLETING COMMITTEES, LOCAL.— App. by Central Billeting Board (q.v.) from summer of 1917. in localities where civilian workers were billeted. Obj. To organize and supervise locally provision of billets. Repr. L.A.'s concerned and others chosen by Billeting Board. Ref. P.G.A., 1917-18.

BLEACHING POWDER USERS COMMITTEE.— by M.M., Nov.-Dec. 1916. Obj. To advise M.M. on needs of users of bleaching powder. Repr. Users of bleaching powder. Ref. B.T.J., 7th Dec. 1916.  
BOARDS OF MANAGEMENT. MUNITIONS, DISTRICT. App. in various districts, at instigation of M.M., from spring of 1915, forty-six being in existence at end of 1917. Obj. To develop and organize local munitions output. Repr. Employers in engineering and munitions trades, and, in a few cases, on their invitation, T.U.'s. Ref. II. C, No. 40. 1917, pp. 11. 12. (These bodies were sometimes known as Local Munitions Committees, and appointed various local representatives on their work.)  
BOARDS OF MANAGEMENT, MUNITIONS, EXECUTIVE COMMITTEE.

—  
App. by M.M. in or after summer of 1915. Obj. Presumably to carry out central administration in connexion with work of District Boards. Repr. Not stated. Ref. Cd. 8741, p. 8.

BOY WELFARE.

—  
See Health and Welfare Department.  
WILDING LABOUR COMMITTEE. App. by MAI.. Nov. 1915, and reorganized and attached to MX. in 1918. Obj. To secure uniformity in application of Fair Wages Resolution to Government Building Contracts, and (later) co-ordinate use of building labour by Government Departments. Repr. Government Departments concerned. Ref. Cmd. 325, p. 161 ; L.G., July 1918, p. 300 ; H.C., Nos. 185, p. 29, 221, p. 15, 1919. Still in existence as Inter-Departmental Consultative body at MX.  
BUILDING MATERIALS SUPPLY DEPARTMENT.

—  
App. by M.M.

## Notes on "Civil Aviation"

shortly after Armistice. Obj. To organize supply of building materials for housing "schemes" (Programmes). Repr. Official and expert. Ref. Cmd. 824, p. xlii ; Cmd. 1440, p. 121 ; H.C., No. 10. 1022, p. xxv. Diss. Transferred to M.H., June 1920, and in course of liquidation. Feb. 1922.

CANADIAN' SHELL COMMITTEE.— App. by Canadian, in co-operation with British, Government early in the War. Obj. To develop Canadian out put of shells. Repr. Canadian Government, business men, &c. Ref. H.C., No. 40, 1917, p. 15. Diss. Beplaced by Imperial Munitions Board (q.v.), Nov. 1915.

CANTEENS, MUNITIONS. FINANCE COMMITTEE.— App. jointly by M.M. and L.C.B.. Mar. 1917. Obj. To secure financial solvenev of canteens. Repr. M.M.. L.C.B. Ref. H.C., No. 100, &c, 1918, p. viii.

CHEMICAL COMMITTEE (MUNITIONS INVENTIONS DEPARTMENT).

^ See Cd. 9231, p. 2!). Details lacking.

CHEMICALS. MUNITIONS. COMMITTEE INTEH-A LLIED. - See wider Munitions Council, Inter-Allied.

CHEMICAL WARFARE COMMITTEE.—Mentioned Cmd. 905. p. 70. No details.

CHEMICAL WARFARE, MEDICAL PROBLEMS.

—

See W.O.

CHINA WOOD OIL SALES DEPARTMENTAL COMMITTEE.—, ^, by M.M.. probably in 1920. Obj. To inquire into contracts for sales of surplus oil. Repr. M.M. Ref. H.C.. No. 102. 1921. p. 28. Diss. Before Max- L92

CIVIL INDUSTRIES COMMITTEE. -App. by M.M.. originally in Feb. 1917, as Priorities Advisory Committee, and reconstituted under new title, Dee. 1917, as Sub-Committee of Priorities. War Committee (see Cabinet). Obj. To investigate needs of non-essential industries for raw materials, prevent undue restriction and arrange for supplies for them. Repr. Government Departments concerned and prominent business men. Ref. B.TJ.. 1st Aug. 1917 and 9th Jan. 1919. Diss. Jan. 1919.

CLYDE MUNITION WORKERS' COMMISSION. -App. by M.M.. Oct. 1915. Obj. To inquire into apprehended differences and discontent affecting munition workers in Clyde District. Repr. Composed of Lord Balfour of Burleigh and Mr. (now Sir) Lvndcn Maeassey. K.C. Ref. Cd. 8136. Diss. Nov. 1915.

COAL OAS See under (las Traction.

CONTRACTS, MUNITIONS, LIQUIDATION COMMITTEE.

—

App. by M.M., Sept. 1919. Obj. To expedite and be responsible for liquidation of contracts and co-ordinate work. Repr. M.M. (Financial Departments), business experts. Ref T., 23rd Sept. 1919, p. 11.

CONTRACTS, READJUSTMENT, ADVISORY COMMITTEE.

—

App. jointly by Disposals and Liquidation Commission (q.v.) and Tre., early in 1921. Obj. To advise Commission upon readjustment of contracts, on grounds of trade and monetary stringency, during post-war liquidations. Repr. The Commission, Tre. and others presumably. Rcf. II. C, No. 10, 1922, p. xxxiii, No. 102, 1921, p. 26.

CONTROLLED ESTABLISHMENTS, PROFITS.

—

See Limitation of Profits.

## Notes on "Civil Aviation"

CO-ORDINATING, MINISTRY OF MUNITIONS. COMMITTEE.

App.

by Munitions Council (q.v.) late in 1917. Obj. To co-ordinate work of various Departments of M.M. under the Council. Repr. The Council, various Departments. Ref. H.C., No. 132. 1918, p. 4.

COPPER, PURCHASE AND DISTRIBUTION, COMMITTEE.

App.

by M.M., Dec. 1916. Obj. To advise M.M. on these matters. Repr. Merchants, importers, Metal Exchanges. Ref. B.T.J., 14th Dec. 1916; T., 12th Dec. 1916, p. 5.

COSTS OF PRODUCTION (NATIONAL FACTORIES) COMMITTEE.—

App. by M.M. late in 1916 or in 1917. Obj. To control costing work of National Factories and secure improvements. Repr. Presumably largely expert. Ref. Cmd. 325, p. 111.

DEMOBILIZATION BOARD. MUNITIONS.

—

App. by M.M.. early

Nov. 1918, to co-operate with Demobilization and Resettlement Department (see M.L.). Obj. To secure speedy transition from munitions to normal production, and carry out liquidation of contracts, excluding questions assigned to M.L. Repr. M.M., the Military Services, &c, with financial and expert advisers. Ref. B.T.J.. 14th Nov., p. 609 ; L.G., Nov. 1918.

(See also Reconstruction and Demobilization.)

DESTRUCTION OF DOCUMENTS TRIBUNAL.— ^, by H.O., April

1921, under Tribunals of Inquiry (Evidence) Act, 1921. Obj. To report upon alleged instructions by officer of M.M. to destroy or conceal documents.

Repr. H.L., Legal Profession, business men, chartered accountants.

Ref Cmd. 1340. Diss. May 1921.

DILUTION COMMISSIONS, CLYDE AND TYNE.

—

App. by M.M.,

Jan. 1916. Obj. To organize and supervise drawing up of "schemes" (Programmes) of dilution in individual establishments, in consultation with shop stewards and local T.U. officials. Repr. M.M., B.T., Employers, Legal Profession, Labour. Ref. Cole, pp. 108-9 ; Orton, Labour in Transition, p. 85. Diss.

Tyne Commission, May 1916, work being taken over by Clyde Commission, which came to an end by 1st Sept. 1916.

(Provision was later made by appointment of Dilution Officers and otherwise for a similar development of dilution in other areas.)

DILUTION, SHOP COMMITTEES.— ^, by workpeople concerned at

suggestion of Dilution Commissions in Clyde and Tyne areas and of M.M. elsewhere in individual establishments, from 1916.

Obj. To discuss with

management details and difficulties of "schemes" (Programmes) of dilution. Repr. Sometimes skilled workpeople only (shop stewards and T.U.'s), sometimes firm and skilled workpeople jointly, usually with provision for arbitration on disputed points. Repr. Cole, p. 109 ; Orton, Labour in Transition, p. 85.

DISPOSALS ADVISORY COMMITTEES.

—

App. by M.M. from Jan.

1919. Obj. To advise the Sectional Boards established to deal with individual classes of property. Repr. Not stated, presumably largely expert.

Ref. II. C, No. 97. 1920. p. • > {}.

DISPOSALS ADVISORY COUNCIL.—This was a reconstitution of the Surplus Government Property Advisory Council (.sec M.R.). which was dissolved on constitution of Disposals Board (q.v.).

(This appears to be the Standing Advisory Committee of M.M. on Surplus War Munitions which in T. of 17th April 1919. p. 535. was referred



## Notes on "Civil Aviation"

to as having existed for some time.)

DISPOSALS AND LIQUIDATION COMMISSION. App. apparently by Government on closing down of M.M. at end of Mar. 1921. absorbing Disposals Board. Obj. To wind up accounts of war-time Ministries and Departments, and to carry out disposal of surplus stores. Repr. Parliament. W.O.. A.M.. M.M., Prominent Business Men. Chartered Accountants. Ref. Cmd. I 112, No. L02, 1921. passim. Still in existence at end of 1922. DISPOSALS BOARD. App. by M.M.. under Cabinet decision. Jan. 1919, in place of Surplus Government Property Disposals Board (see M.R.). Obj. To organize disposal of surplus government property. Repr. Parliament, M.M.. W.O., prominent manufacturers and business men. Ref. Cmd. 850, pp. .\*). 1.'5. Diss. Absorbed into Disposals and Liquidation Commission (q.v.), Mar. 1921.

(The Board appointed Sectional Boards to deal with particular classes of property.)

DISPOSALS BOA HI). AMALGAMATION COMMITTEE.

—

App. by the Board in 1920 or early 1921. Obj. To secure amalgamation of controls during disposal, with a view to economy. Repr. The Board. Ref. Cmd. 1412, p. 0.

DISPOSAL SECTIONAL BOARDS. See under Disposals Board.

DISPOSALS. See also Salvage, and M.R. under Surplus Government Property.

EMERGENCY (MUNITIONS' EXPENDITURE) COMMITTEE.—.SY<' Tre.

ENLISTMENTS. See Labour Enlistments.

ESTABLISHMENT, BRANCH SUB-COMMITTEES, App. by M.M. since Armistice. Obj. To expedite reduction of staffs of particular branches of M.M. Repr. Experienced officials. Ref. Cmd. 1055. p. 14.

ESTABLISHMENT COMMITTEE. App. by M.M., Feb. 1919. Obj. To expedite reductions in head-quarters' staff. Repr. Business men with experience of Government Departments. Ref. Cmd. 1055. p. 14.

EXPENDITURE, MUNITIONS. STANDING AND EMERGENCY

S TANDING COMMITTEES. Incidental reference on pp. 15. 16 of H.C., No. 102, 1921. The Emergency Standing Committee may be the Emergency

Committee referred to above. See also Tre.

EXPLOSIONS (COMPENSATION) ADVISORY COMMITTEE.

—

App.

by M.M. about end of 1916. under Munitions (Liability for Explosions) Act, 1916. Obj. To advise M.M. on rate of contributions to "scheme" (Programme) of insurance against liability to injury, fix rates and decide disputes. Repr. Mainly Insurance Experts. Ref. P.G.A., 1916.

(This is presumably the Explosions at Government and Controlled Factories Committee of Cd. 8741. p. 5.)

EXPLOSIONS IN EXPLOSIVE FACTORIES. STANDING COMMITTEE.

—

App. by M.M. in 1917. Obj. To inquire into causes of explosions and fires in explosives factories. Repr. M.M.. II. O.. and others. Ref. Cd. 9050, p. 2.

EXPLOSIVES AND EXPLOSIVES" MATERIALS INTER-ALLIED ADVISORY COMMITTEE.—. ^, jointly by chief Allied Governments early in 1918. Obj. To advise as to purchase of these products by British Government for European Allies. Repr. Chief Allied Governments. Ref. Cd. 9005.

EXPLOSIVES. HANDLING AND STORAGE COMMITTEE (LOCAL).

## Notes on "Civil Aviation"

App. by M.M. in 1917. Obj. To investigate this matter in a Northern Port. Repr. M.M.. H.O.. and others. Ref. Cd. 90.30. p. 2. Diss. Presumably later in 1917.

FERROUS SCRAP BRANCH.

—

App. by M.M. by May 1918. Obj. To organize recovery of materials from ferrous scrap. Repr. Official and expert. Ref. Cmd. 325. p. 114.

FERTILIZERS COMMITTEES.

—

See M.F. under Fertilizers. Phosphates and Potash, Sulphate of Ammonia.

FINANCE, MUNITIONS. ADVISORY COMMITTEE. -App. by M.M. prior to Sept. 1917. Ref. without details. Cd. 8741. p. 8.

FINANCE MUNITIONS COMMITTEE.—App. prior to June 1916.

Ref. without details, Cd. 8256, 8741, p. 8.

FLAX SUPPLIES COMMITTEE.

—

App. by M.M.. about Aug. 1917. after requisitioning of flax crop. Obj. To assist organization of M.M. at Belfast in purchase. &c., of crop. Repr. M.M.. the Linen Trade and. apparently, farmers. Ref. B.T.J. , 27th June 1918. p. 802. Diss. Transferred to B.f., April 1919 and terminated by Mar. 1920.

FOOD SECTION, MINISTRY OF MUNITIONS.

—

App. by M.M. in winter of 1917-18. Obj. To secure, in co-operation with M.F. L.C.B.. &c., adequate supplies of food for munition workers, and advise upon administration of canteens, taking over certain duties from L.C.B. Repr. M.M..

L.C.B., M.F., W.O. and others. Ref. Cmd. 325. p. 291. 340, p. 30. Diss.

Some duties transferred back later to L.C.B. For Food, see also S.I.R.

FOOD SUPPLY TO MUNITION WORKERS COMMITTEE (SOMETIMES CALLED MUNITIONS FOOD COMMITTEE). App. by M.M.

early in 1918. Obj. To advise on supply and distribution of food to munition workers. Repr. M.M.. Adm.. L.C.B.. medical and canteen

experts, Labour, women. Ref. B.T.J.. 25th April 1918 : Cd. 9005. p. 195. FRENCH MUNITIONS OUTPUT, MISSION ON.

App. by M.M., with

approval of French Minister of Munitions, Nov. 1915. Obj. To visit French industrial districts and report on causes of increased munitions output.

liepr. M.M., engineering employers, Labour, experts in munitions engineering.

Ref. Cd. 8187. Diss. Dec. 1915.

(See also I.I.O. under Munitions Manufacture.)

FUEL OIL.

—

See under Oil.

GAS FIRING.

—

See under Nitrogen Products.

GAS PLANT PRIORITY.

—

See under Priority, Munitions, Sub-Committees.

GAS TRACTION, INTER-DEPARTMENTAL COMMITTEE.

—

App. by

Petroleum Executive, Nov. 1917. Obj. To investigate use of coal and other gas for power, especially in motor traction. Repr. The Executive, B.T., H.O., L.G.B., M.M., M.R., L.A.'s, gas producers and engineers,

## Notes on "Civil Aviation"

motor users. Ref. Cmd. 263. Diss. June 1919.  
OAS TRACTION, EXPERT SUB-COMMITTEE.

—  
App., at request of

Main Committee. May 1918. Obj. To carry out expert technical investigations required. Repr. Main Committee, engineering and scientific experts.  
Ref. Cmd. 263. Diss. June or July 1919.

GRAIN FOR YEAST AND ALCOHOL COMMITTEE.

App. by M.M.,

April 1917. Obj. To consider consumption of grain for yeast and munitions' alcohol. Repr. MM. and others. Ref. B.T.J. , Oct. 1918, p. 456. Diss. May 1917.

OH ETNA AND WALTHAM ABBEY, COMMITTEE OF INQUIRY.—

App. by M.M., Feb. 1919. Obj. To consider future of these factories. Repr. Parliament, M.M., B.T., W.O., manufacturers, contractors. Ref. Cmd. 667. Diss. June 1919.

HEALTH AND WELFARE DEPARTMENT, MINISTRY OF MUNITIONS.

—  
App. by M.M., early in 1916, as Welfare Department and subsequently expanded. Obj. To promote and organize good welfare conditions' in munitions' factories and subsequently outside the factories, e.g. provision for maternity, care of children, &c. Repr. Official and expert. Ref. Cd. 9005, pp. 192 3 ; Cmd. 310.

A Boy Welfare Section was also established. See also Welfare, Works Committees.

HEALTH OF MUNITION WORKERS ADVISORY COMMITTEE.—

App. by M.M., May 1918. Obj. To advise on general principles of carrying out welfare and health work of M.M., and report on matters specially referred to them. Repr. M.M. and Health and Welfare Departments, H.O., M.R.C., Employers. Labour, Women. Ref. T., 20th May 1918.

HEALTH OF MUNITION WORKERS COMMITTEE.

—  
App. by M.M.,

Sept. 1915. Obj. To advise upon industrial fatigue, hours and other matters affecting health and efficiency of munition workers. Repr. M.M., II. O., Medical Profession and Research, Manufacturers, Labour, Women. Ref. Cd. 8511, 9065. Diss. April 1918, work being continued permanently in Industrial Fatigue Research Board (see N.H.I.C.).

HIGH EXPLOSIVES DEPARTMENT.

—  
See W.O.

HOLIDAYS, MUNITIONS, COMMITTEE.

—  
App. by M.M., July 1916.

Obj. To recommend arrangements for workmen to take holidays in relays to secure uninterrupted output. Repr. Parliament, M.M., II. O., Employers, Labour, women, social experts. Ref. T., 28th July 1926.

HORSE CHESTNUTS.

—  
See M.F.

HOSTELS DEPARTMENT.

—  
App. by M.M. in 1916. Obj. To organize hostel accommodation for female and other munition workers required to live away from home. Repr. Official and expert. Ref. Cmd. 340.

HOURS OF LABOUR, MUNITIONS, COMMITTEE.

## Notes on "Civil Aviation"

App. by M.M.

late in 1915, in co-operation with I.O. Obj. To secure joint consideration by two Departments of applications for Sunday work or long overtime during the week. Repr. M.M., H.O. Ref. Cd. 8276, p. 6.

IMPERIAL MINERAL RESOURCES BUREAU INTER-DEPARTMENTAL COMMITTEE.

—

App. by M.M., June 1917. Obj. To prepare

"scheme" (Programme) for Bureau in London. Repr. M.M., In.O., G.I., The Dominions. Geological Survey. Imperial Institute, mining experts. Ref. Cd. 8916.

Diss. Late in 1917.

IMPERIAL MUNITIONS BOARD.— App. by Canadian Government, in co-operation with M.M.. Nov. 1915, replacing Canadian Shell Committee.

Obj. To develop Canadian munitions production, and act as purchasing agent for G.B. and (later) U.S.A. in Canada. Repr. Canadian Government, business men, &c. Ref. II. C, No. 40, 1917, p. 15 ; Cmd. 325, p. 118.

Diss. Operations terminated by M.M. immediately after Armistice.

IRISH BRANCH, MINISTRY OF MUNITIONS.— ^, by M.M. in second half of 1915. Obj. To organize munitions output in Ireland. Repr. Official and expert. Ref. Cd. 8303, p. xiii.

INDIA MUNITIONS BOARD.

—

See In.O.

INDUSTRIAL UNREST COMMISSION OF INQUIRY. See Cabinet.

INTER-ALLIED MUNITIONS BUREAU. See Munitions.

LABOUR ADVISORY BOARDS OR COMMITTEES ON WAR OUTPUT, LOCAL.

—

App. by M.M. and Labour Advisory Committee.

National (see next entry), mainly in Oct. and Nov. 1915, but some earlier and later. Obj. To assist in enrolment of W.M.V.'s, and generally investigate employers' failure to observe M.W.A.'s, secure records of changes in workshop practice and watch dilution "schemes" (Programmes). Repr. Munitions T.U.'s. Ref. L.Y.B., 1910, p. 112 ; Cole, p. 104.

LABOUR ADVISORY COMMITTEE ON WAR OUTPUT, NATIONAL.

—App. by the Government after Treasury Conference (Mar. 1915). and subsequently absorbed in M.M. Obj. To advise generally in regard to securing and utilizing labour for munitions work. Repr. Munitions T.U.'s. Ref. L.Y.B., 1910 ; Cole, p. 74. Diss. Superseded by Trade Union Advisory Committee (q.v.) about end of 1917.

LABOUR EMBARGOES JOINT CONSULTATIVE COMMITTEE.—

App. by the Government on recommendation of Labour Embargoes Inquiry Committee (q.v.), Oct. 1918. Obj. To advise M.M. and Adm. on means of securing best possible distribution of skilled labour in munitions trades. Rcpr. The Government, Employers and T.U.'s concerned. lief.

L.Y.U., 1919, p. 105 ; Cole, p. 156. Diss. Rendered nugatory by Armistice.

(The Trade Union Women's Advisory Committee were also invited to appoint members, but some difficulties arose over the representation to be accorded to them.)

LABOUR EMBARGOES INQUIRY COMMITTEE (MR. JUSTICE McCAR DIE'S COMMITTEE).

—

App. by M.M., Aug. 1918. Obj. To

investigate question of embargoes on employment of skilled labour and causes of strike over them. Rcpr. M.M., Adm., M.L., Employers, T.U.'s. Ref. H.M.S.O., 1918 ; Cole, p. 150. Diss. Sept. 1918.

LABOUR ENLISTMENTS COMPLAINTS COMMITTEE AND SECTION.

App. by M.M., April 1917. Obj. To deal with cases where Local

## Notes on "Civil Aviation"

Committees (q.v.) fail to agree. Rcpr. Presumably Departments concerned and Labour. Ref. L.Y.R., 1919, p. 147.

### LABOUR ENLISTMENT COMPLAINTS. LOCAL COMMITTEES.—

App. by M.M., April 1917, for each area, under Schedule of Protected Occupations. Obj. To deal with complaints of victimization and improper enlistment. Rcpr. M.M.. W.O., Adm., Chief Dilution Officer for each area, Labour. Ref. L.Y.R., 1919, p. 117.

### LABOUR PRIORITY MUNITIONS COMMITTEE.

—

App. by M.M.  
in 1915 or early 1910. Obj. To deal with questions of priority for available labour. Repr. Not stated. Ref. Cd. 8741, p. 8.

### LABOUR SUPPLY, MUNITIONS, CENTRAL COMMITTEE.

—

App. by  
M.M.. Sept. 1915. Obj. To promote and speed up dilution and preparation of definite "schemes" (Programmes). Repr. M.M.. National Labour Advisory Committee, engineering employers and T.U.'s. Ref. Orton, pp. 00, 72; Cole, p. 88.  
Dmj. In 1917. its functions having been gradually taken over by Arbitration Tribunals, Special (sec above).

### LEAD, SPANISH, PURCHASES. INTER-ALLIED COMMITTEE.—

App. jointly by the Chief Allied Governments early in 1918. Obj. To purchase supplies jointly. Rcpr. The Governments concerned. Ref. Cd. 9005.

LEAVING CERTIFICATES.—See under Rates of Skilled Time-workers.

### LIMITATION OF PROFITS. ACCOUNTANTS ADVISORY COMMITTEE.

App. by M.M. before .Line 1917. Obj. To advise on questions of valuation, accountancy. &c., in this connexion. Repr. Consulting chartered accountants. Ref Cd. 8623, pp. '5-5.

LIMITATION OF PROFITS, HOARD OF REFEREES. App. by M.M.  
under MAY. A.. 1915, by Munitions (Limitation of Profits) Rules. Sept. 1915. Obj. To decide disputed cases of assessment. &c. Repr. Largely expert. Ref. P.G.A., 1915; E.G., Oct. 1910 (Supplement, pp. 5-7) ; Cd. 87 U, p. 1 (Controlled Establishments. Hoard of Referees on Profits).

LIQUIDATION HOARD. App. by the Disposals and Liquidation Commission (q.v.), April 1921. Obj. To exercise certain of former powers of M.M. for liquidating accounts and contracts. Repr. The Commission Civil Service, Chartered Accountants. Ref. Cmd. 1640, p. 15.

### LOCAL MUNITION'S COMMITTEES.

—

See Armament Output Committees  
; Boards of Management, District ; Metropolitan Munitions Committee.

### LUBRICATING OILS ADVISORY COMMITTEE.

—

App. by M.M.  
prior to Sept. 1917. Ref, without details. Cd. 8741, p. 7.  
McCARDIE (MR. JUSTICE) COMMITTEE.

—

See Labour Embargoes.

MACHINE TOOLS CENTRAL CLEARING HOUSE. ~ ^ Lv;;. by M.M.  
late in 1916. Obj. To secure most efficient distribution of existing machine tools and plant. Repr. Official and expert. Ref. Cd. 9005. p. 7 1.  
(A Census of Machinery had already been carried out under W.O. and M.M. in 1915.)

### MACHINE TOOLS COMMITTEE.

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## Notes on "Civil Aviation"

App. prior to Sept. 1917, either by M.M. or by Armaments Output Committee, and absorbed later in M.M.  
Obj. To organize and supervise output of machine tools. Repr. Machine tool makers and others. Ref. Cd. 8741, p. 7.  
MAN POWER. TRADE UNION. COMMITTEE.

—  
App. by Munitions  
Trade Unions (other than Amalgamated Society of Engineers) during negotiations with the Government, early in 1918. Obj. To discuss with Amalgamated Society of Engineers revision of schedule of Protected Occupations and demand for combing out of all dilutees before taking of skilled engineers for the Army. Repr. The T.U.'s concerned. Ref.T., 15th Feb. 1918, p. 7.  
MATERIALS.

—  
See Metals and Materials.  
MECHANICAL TRANSPORT INTER-ALLIED COMMITTEE.- Set e under Munitions Council, Inter- Allied.  
METALS AND MATERIALS ECONOMY COMMITTEE.— App. by M.M. Nov. 1916. Obj. To advise on most economical use of metals in manufacture of munitions. Repr. Not stated. Ref. B.T.J., 30th Nov. 1916.  
METROPOLITAN MUNITIONS COMMITTEE.

App. by M.M. in summer of 1915. Obj. To organize production of munitions in London area for M.M. Repr. Manufacturers and others in London area. Ref. B.T.J.

,  
23rd May 1918. Diss. Absorbed into central organization of M.M., Jan. 1918.  
MILITARY SERVICE COMMITTEE.— by M.M. in autumn of 1916.  
Obj. To examine cases of fit men of military age on head-quarters' staff, to secure release for military service of all not indispensable to efficiency of M.M. Repr. M.M., London Ship-owners' and Transport Workers' Military Service Committee. Ref. Cd. 8411. Diss. Oct.-Nov. 1916.  
MINERAL OIL.

—  
See under Oil.  
MINERAL RESOURCES ADVISORY COMMITTEE.

—  
App. by M.M..  
Mar. 1917. Obj. To advise on development of home resources (other than coal and iron) for war purposes. Repr. M.M., B.T., D.A.T.I., Geological Survey, mining and metallurgical experts. Ref. B.T.J., 5th April 1917 ; Cd. 9184. Diss. Reported Mar. 1918, but seems to have continued in existence subsequently.

### MINERAL RESOURCES DEVELOPMENT DEPARTMENT.

—  
App. by M.M., Mar. 1917. Obj. To examine and develop home mineral properties (except coal and iron) for war purposes. Repr. Official and expert. Ref. B.T.J. , 5th April 1917, p. 66; Cd. 9184..  
MOTOR VEHICLES PRIORITY.

—  
See under Priority, Munitions, Subcommittees.  
MOTORS, ARMY, SALES ADVISORY COMMITTEE. App. by Disposals Board in winter of 1918-19. Obj. To advise and assist in disposal of surplus army motors. Repr. Motor manufacturers and users. Ref. T., 20th Mar. 1919, p. 7.

## Notes on "Civil Aviation"

MUNITIONS ACT, 1915, AMENDMENT COMMITTEE.

—

App. by Munitions T.U.'s at a Conference with the Minister of Munitions. 30th Nov. 1915. Obj. To negotiate for amendments to M.W.A. Repr. Munitions T.U.'s. Ref. Cole, pp. 11521. Diss. The Committee appears to have come to an end, Dec. 1915, and a further National Conference of Munitions T.U.'s appointed another Committee to negotiate with M.M. (See also Munitions of War Bill, 1917.)

MUNITIONS ADVISORY COMMITTEE.

—

App. prior to June 1916. Ref. without details, Cd. 8256, p. 6. This appears to be either the Advisory Council or the Cabinet Committee (see below).

MUNITIONS ADVISORY COUNCIL.

—

App. by M.M. in 1915 or early 1916. Obj. To advise and assist M.M. generally. Repr. Heads of important departments in M.M. Ref. H.C.. No. 132, 1918, p. Diss. Absorbed into Munitions Council (q.v.), Aug. 1917. MUNITIONS BUREAU, INTER-ALLIED. App. prior to Sept. 1917. Ref. without details. Cd. 8741, p. 8. MUNITION'S. CABINET COMMITTEE. See Cabinet. MUNITIONS COUNCIL. App. by Minister of Munitions, in reorganization of M.M., Sept. 1917. and reconstructed shortly after the Armistice for purposes of disposal and liquidation. Obj. To co-ordinate and direct different branches of the work, and settle important questions of policy. Repr. Composed of the Minister, Parliamentary Secretaries and representatives of the ten Groups of Departments (see Heading to Section) in M.M. Ref. II. C. No. 151, 1917, p. xi; Cd. 9005, p. 68; Cmd. 325, p. 125. Diss. By end of Mar. 1921.

MUNITIONS COUNCIL, INTER-ALLIED. App. by Chief Allied Governments, June 1918. Obj. To organize single control of purchase and distribution of munitions for allies, and co-ordinate work of Committees (similarly constituted) for important branches of munitions work. Repr. Chief Allied Governments. Ref. Cmd. 825, pp. 2;}. 1089. 169. Diss. At or after Armistice.

(Committees were constituted for Aircraft, Chemicals, Explosives, Mechanical Transport, Nitrates (see Nitrate of Soda Executive), Non-Ferrous Metals, and Steel.)

MUNITIONS FOOD COMMITTEE. See Food Supply.

MUNITIONS INVENTIONS ADVISORY PANEL. App. by M.M.. Aug. 1915. Obj. To assist Munitions Inventions Branch in dealing with projects of inventions for munitions for land warfare. Repr. Scientific experts.

Ref. B.T.J.. Sept. 1915.

(The Panel appointed Committees of its members to investigate various projects.)

MUNITIONS INVENTIONS BRANCH, (LATER) DEPARTMENT.—

App. by M.M. in summer of 1915. Obj. To examine and develop projects for inventions for land warfare, submitted to M.M. Repr. M.M. and experts. Ref. Cd. 9005, p. 62.

MUNITIONS LEVY.

—

See Limitation of Profits.

MUNITIONS OF WAR BILL. 1917, TRADE UNION COMMITTEE.—

App. by 50 Munitions' Trade Unions after conference with Government, May 1917. Obj. To consider amendments to the Bill and confer with M.M. on its terms and on any grievances arising from it. Repr. The T.U.'s concerned.

## Notes on "Civil Aviation"

Ref. T. 11th May 1917. p. 3. Diss. Later in 1917.

MUNITIONS PARLIAMENTARY. PARLIAMENTARY EXECUTIVE COMMITTEES.— The former referred to without details in Cd. 8256, p. 6, was probably appointed in 1915. The Executive Committee (Ref. Cd. 8741, p. 8) would appear to have come into existence in 1916 or the first half of 1917, and was probably a reorganization of the Parliamentary Committee.

The purpose in each case was presumably to organize the work of Members of Parliament in expediting output of munitions and the Committees represented the chief parties in Parliament.

MUNITIONS WORK BUREAUX.

—

See War Munition Volunteers.

MUNITION WORKERS' COMB-OUT, AREA COUNCILS.

—

App. by

M.M.. May 1917. Obj. To carry out government "scheme" (Programme) for comb-out of munitions works under new Trade Card Scheme. Repr. M.M., M.L., M.N.S.. W.O., Labour, Enlistment Complaints Committee. Ref. T., 9th May 1917, p. 3.

NATIONAL FACTORIES COMMITTEE.— Referred to on pp. xvi. xvii. 126-7 of H.C., Nos. 100. &c, 1920. No details are given, but the Committee was apparently appointed by M.M.. who were represented by the Chairman.

See also Costs of Production (National Factories).

NITRATE OF SODA EXECUTIVE.— ^, after Inter-Allied Conference at Paris, Nov.-Dec. 1917, by chief Allied Governments, and attached to M.M. Obj. Joint purchase and supply of Chilean Nitrates for Allied Governments.

Repr. Governments concerned, Commission Internationale de Ravitaillement. Repr. J.B.A., Feb. 1918. Diss. April or May 1919.

NITROGEN PRODUCTS COMMITTEE.

—

App. by M.M., June 1916.

Obj. To advise upon problems of production, supply and distribution of nitrogen and its products in peace and war, and carry out experiments.

Repr. M.M., B.A., B.T., Royal Scientific Societies, eminent scientists, engineers and business experts. Ref. Cmd. 4872. Diss. May 1919.

NITROGEN PRODUCTS SUB-COMMITTEES were appointed by the Main Committee, 'to utilize the special qualifications and experience of its members to the best advantage,' for Economics, Experiments, General Purposes, Power and Gas-Firing Processes (see Cmd. 482. p. 2). A Research Section was also organized by the Munitions Invention Department (q.v.) to conduct experiments.

NITROGEN, SYNTHETIC COMPOUNDS, COMMITTEE OF MUNITIONS COUNCIL.

—

App. by the Council, Oct. 1917. Obj. To examine proposals of Ammonia Executive Committee for factory and processes for synthetic nitrogen production. Repr. Munitions Council. Ref. Cmd. 482, pp. 141-2. Diss. About April 1918.

NON-FERROUS METALS DEPARTMENT.

—

App. by M.M., Mar. 1917.

Obj. To assist in increasing home output. Repr. Official and expert. Ref. Cd. 9005, p. 71.

NON-FERROUS METALS, INTER-ALLIED, COMMITTEE.

See

Munitions Council, Inter-Allied.

OIL FUEL. PRODUCTION FROM HOME SOURCES, COMMITTEE —



## Notes on "Civil Aviation"

Ap/>. by M.M. in consultation with CO. and Petroleum Executive, April 1918. Obj. To advise on proposals of Petroleum Executive, and measures taken by M.M., to increase home production. Repr. Parliament, M.M.. Adm., Coal Controller, with technical adviser (Fuel Research Board). Ref. Cd. 9128. Diss. Later in 1918.

OIL, MINERAL. PRODUCTION DEPARTMENT.— ^ pp. by M.M. at instance of the Government, May or June 1917. Obj. To undertake production of oils from home sources. Repr. Official and expert. Ref. Cd. 9005, p. 135.

OILS AND FATS BRANCH. App. by M.M. as Branch of Explosives Department, on assuming control of these products, Mar. 1917. Obj. To organize control of fats, oils, oil seeds and products (except mineral and essential oils, butter and lard). Repr. Official and expert. Ref. B.T.J., Istli Mar. 1917.

OILS AND FATS CONSULTATIVE COMMITTEE.-- ^, by M.M. by arrangement with B.A. and F.C.. Mar. 1917. Obj. To assist in organizing control of fats, oil seeds and cake. &c. Repr. Government Departments concerned in control. Ref. J.B.A., Mar. 1917.

ORDNANCE FACTORIES COMMITTEE. See Woolwich.

ORDNANCE, MUNITIONS, COMMITTEE. App. by M.M. prior to Sept. 1917. Obj. To initiate and supervise research and, in advisory capacity, criticize and amend designs, submitted by Woolwich Arsenal and armament firms. Repr. 'Officers of high attainments and scientific ability.' Ref. Cd. 8741, p. 8; Cmd. '229. p. 12.

(The Committee worked through a number of Sub-Committees.)

PARLIAMENTARY EXECUTIVE, MUNITIONS, COMMITTEE.

—

See

under Munitions.

PETROLEUM ALLOC ATION COMMITTEE. App. by U.S.A. Fuel Administration about end of 1917. Obj. To avoid competition in placing orders in U.S.A. and (later) fix prices. Repr. The Fuel Administration. Ref. Cmd. 325, p. 204.

PETROLEUM DISTRIBUTION COMMITTEE.—. //>/>. as Committee of the Petroleum Supplies Pool Hoard (q.v.), about April 1917. Obj. To control and regulate distribution of supplies. Repr. The Pool Board. Ref.

B.T.J. , 3rd May 1917; J.B.A., Mar. 1918, p. 1481. Diss. Apparently absorbed into Petroleum Executive by end of 1917.

PETROLEUM EXECUTIVE.

App. at request of Cabinet, by Minister in charge of problem, to work in M.M., Aug. 1917. Obj. To settle questions of policy affecting petroleum oils and oil products and co-ordinate work of consuming Departments. Repr. Departments concerned, scientific and business experts. Ref. Cd. 9005, p. 136 ; B.T.J., 11th Oct. 1917.

PETROLEUM EXECUTIVE COMMITTEE.— Such a Committee, presumably advisory to the Executive, and appointed about the same time, is referred to (without details) in Cmd. 137.

PETROLEUM INTER-ALLIED COUNCIL.

—

App. jointly by American, British, French and Italian Governments, Nov. 1917. Obj. To advise Petroleum Executive on means of providing for Allied requirements and approve purchasing programmes. Repr. The four Governments. Ref. Cmd. 325, pp. 203-4. Diss. After close of War.

(The Council appointed Tank Storage and Specifications Commissions, which visited France and U.S.A. respectively, and eo-operated with the Programmes Committee for Petroleum, see Cabinet.)

PETROLEUM, REGULATION OF SUPPLIES. INTER-DEPARTMENTAL

## Notes on "Civil Aviation"

COMMITTEE.— App. by the Government and housed with M.M., Feb. 1917. Obj. To co-ordinate work of different Departments in connexion with petroleum. Repr. The Departments concerned. Ref. Cd. 9005, p. 135. Diss. Superseded later in 1917 by the Oil, Mineral. Production Department and the Petroleum Supplies Pool Board (q.v.).  
PETROLEUM SUPPLIES, MUNITIONS. BRANCH.

—  
App. by M.M..  
Feb. 1917. Obj. To organize provision and distribution of petroleum and similar oils for munitions purposes. Repr. Official and expert. Ref. B.T.J. , 18th Feb. 1917. Diss. Apparently absorbed into Petroleum Executive by end of 1917.  
PETROLEUM SUPPLIES, MUNITIONS, BRANCH. RESEARCH SECTION.

—  
App. by M.M., Feb. 1917 or later. Obj. To investigate and develop unproved home sources of supply of mineral oils. Repr. Petroleum technologists and experts. Ref. B.T.J., 25th Sept. 1917. Diss. Apparently absorbed into Petroleum Executive by end of 1917.  
PETROLEUM SUPPLIES POOL BOARD.

—  
App. at instance of Government,  
by chief Petroleum Companies jointly with M.M., April 1917. Obj. To ensure adequate supplies for essential purposes by pooling tonnage and distributing facilities and make possible release of men for the Army. Repr. M.M.. Petroleum Companies. Ref. B.T.J. , 3rd May 1917.  
PHOSPHATES AND POTASH DISTRIBUTION COMMITTEE.

—  
See  
under Fertilizers.  
POTASH PRODUCTION BRANCH.

—  
App. by M.M., June 1917. Obj. To secure increased supplies of potash, to meet shortage due to cessation of German imports. Repr. Official and expert. Ref. B.T.J. , 5th Sept. 1918.  
POWER AND GAS FIRING.

—  
See under Nitrogen Products Sub-Committees.  
184 Munitions of War  
PRINTERS' METAL FOR BULLETS, TRADE COMMITTEE.

App.  
by M.M. about Jan. 1918. Obj. To prepare "scheme" (Programme) for using printers' metal and plates for shrapnel bullets to save tonnage. Repr. Printing and publishing firms. Ref. B.T.J., 7th Eel). 1918.

App. in all  
British Overseas Dominions at instigation of M.M., apparently in first half of 1917. Obj. To secure uniformity in allocation of supplies throughout the Empire according to needs of Dominions. Repr. Not stated. Ref. Cd. 9005, p. 72.  
PRIORITIES, MUNITIONS. ADVISORY COMMITTEE.

—  
See Civil  
Industries Committee.  
PRIORITY, MUNITIONS, COMMITTEE.

—  
App. by M.M. in summer or  
autumn of 1915. Obj. To advise Priority, Munitions. Department (q.v.) in its work. Repr. Departments of M.M., and later other Government

## Notes on "Civil Aviation"

Departments concerned. Ref. B.T.J., 1st Aug. 1918.  
PRIORITY, MUNITIONS. DEPARTMENT.

—  
App. by M.M. in summer  
or autumn of 1915. Obj. To co-ordinate and adjust work of different  
departments and claims to priority. Repr. Official and expert. Ref.  
B.T.J., 1st Aug. 1918. Diss. April 1918.  
PRIORITY. MUNITIONS. LABOUR. See under Labour.  
PRIORITY. MUNITIONS, SUB-COMMITTEES.— App. in 1916 and  
1917 by M.M. for Gas Plant, Motor Vehicles. Railway Material and Textile  
Machinery. Obj. To perform functions of Priority Committee for those  
products." Repr. As with Priority Committee. Ref. B.T.J., 1st Aug. 1918.  
PROGRAMME SUB-COMMITTEE. App. by Munitions Council in 1917.  
Obj. To carry out continuous systematic review of munitions' programme.  
Repr. The Council and various Departments, and largely technical. Ref.  
II. C, No. 1918, j). 0.  
RAILWAYS MATERIALS. See Priority. Munitions, Sub-Committees.  
RATES OF SKILLED TIME-WORKERS DEPARTMENTAL COMMITTEE.  
App. by M.M.. Aug. 1917. Obj. To report upon these rates  
with special reference to relation to wages of less skilled men on payment  
by results, and to question of abolition of leaving certificates. Repr.  
Parliament. M.M.. Adm.. M.L., Employers, T.U.'s in Skilled Trades. Ref.  
Cole, pp. 100. 1 OS 9. Diss. Sept. 1917.  
RECONSTRUCTION AND DEMOBILIZATION COMMITTEE.

—  
App.  
by M.M. about June 1917. Obj. To deal with these questions as affecting  
M.M. Repr. Various Departments of M.M. Ref. Cd. 8910: Cmd. 25,  
j). 125. Diss. Absorbed, Nov. 1918. into Demobilization Board (see above),  
and into Department of Civil Demobilization and Resettlement (see M.L.).  
RESTORATION OF TRADE UNION CONDITIONS SPECIAL COMMITTEE.  
This was appointed by the Joint Committee on Labour Problems  
after the War, representing principal national Labour bodies, to  
suggest measures for making guarantees effective and generally watch  
position. (See Cole, pp. 190-5.  
(For other Committees on this subject see Cabinet. M.L.. M.R.)

RESTRICTIONS, TRADE UNION.

—  
See Trade Union Negotiating Committee,  
below.  
RHODESIA MUNITIONS. (LATER) MUNITIONS AND RESOURCES,  
COMMITTEE.

—  
App. by Chartered Company. Nov. 1915. Obj. To assist  
M.M. in developing local munitions production, in co-operation with  
similar Committee for Union of South Africa, and (later) to carry out  
general survey of Rhodesian resources. Repr. Not stated. Ref. B.T.J.,  
24th Oct. 1918.  
ROAD STONE CONTROL COMMITTEE.

—  
App. by M.M., May 1917.  
Obj. To put into operation control of road stone quarries and supplies for  
M.M. Repr. M.M., L.G.B., W.O.. quarry and road experts, R.f. B.T.J.,  
17th May 1918.  
ROAD STONE LOCAL COMMITTEES.

—  
See W.O.

## Notes on "Civil Aviation"

ROYAL ORDNANCE FACTORIES. WOOLWICH.

—

See Woolwich.

RUBBER CONTROL COMMITTEE.

—

App. by M.M. by Oct. 1918. Obj.

To advise M.M. on establishment of control, with view to economizing in ocean carriage. Repr. Business experts and others. Ref. B.T.J., 17th Oct. 1918, p. 487 ; T., 24th Aug., 11th Oct.. 1918, p. 5.

SALVAGE, MUNITIONS. BRANCH.

App. by M.M., May 1918. Obj.

To organize disposal of obsolete munitions, materials and scrap. Repr. Official and expert. Ref. Cmd. 325, p. 113.

(For Ferrous Scrap Branch, see above.)

SALVAGE, SPECIAL COMMITTEE.

—

App. by Disposals Board, Feb.

1919. Obj. To deal with scientific utilization of scrap, possessing- otherwise little or no value. Repr. Disposals Board. Ref. B.T.J., 6th Mar. 1919.

SCIENTIFIC ADVISORY COMMITTEE.

—

App. by M.M. in 1915. Obj.

To investigate scientific problems of munitions supply and output of essential products. Repr. Presumably various experts. Ref. Cd. 8282, p. xlii.

SEMI-SKILLED MEN'S WAGES.—See Arbitration Tribunal.

SHALE INDUSTRY. SCOTTISH, COMMITTEES.—^, by M.M.. after consultation with Adm. and H.O., Feb. 1917 as separate Committees of owners and men, with joint Chairman representing H.O. and M.M. Obj. To advise M.M. on the industry, and organize increased output. Repr. M.M., H.O., Owners' and Men's Associations, with technical expert adviser. Ref. B.T.J., 1st Mar. 1917 ; Cmd. 490, p. 90.

SHIPYARD TONNAGE OUTPUT COMMITTEES.

App. secured both

by M.M. and H.O. See H.O.

SKILLED TIME-WORKERS.

—

See Rates of.

SLOUGH DEPOT. STANDING COMMITTEE.—^, by M.M. in 1920 or 1921. Obj. To deal with sale, &c, of depot. Repr. M.M. and experts, presumably. Ref. H.C., No. 102, 1921, p. 27.

SOCIAL STUDIES, JOINT COMMITTEES.

—

App. by Conference of

representatives of University Departments held apparently at instigation

of M.M. in 1916 or 1917. Obj. To consider means of training welfare workers. Repr. The Universities, social welfare workers, &c. Ref. Report

on Selection and Training of Welfare Supervisors (P. S. King & Son), 1917.

Diss. During 1917.

SOUTH AFRICA MUNITIONS COMMITTEE.—~.Sve under Rhodesia.

SPECIFICATIONS COMMITTEE.

—

App. by M.M. prior to 1918. Obj.

To advise generally upon specifications for contracts. Repr. Presumably largely technical. Ref. II. C, No. 132, 1918, p. 56.

STAFF, DEPARTMENTAL, COMMITTEE.

—

App. by M.M. about Jan.

## Notes on "Civil Aviation"

1918. Obj. To report on economies and improvements in organization of head-quarters' staff. Repr. Parliament. M.M.. Tre. (Staffs Committee), business men, women. Ref. Cd. 9220. Diss. Nov. 1918. For later Committee on M.M. and Disposals Board (staffing and methods), see T., 12th Sept. 1922. pp. 10, 11.  
STEEL, INTER-ALLIED, COMMITTEE.

—  
See under Munitions Council,  
Inter-Allied.  
STEEL ROLLING AREA COMMITTEES.

—  
App. jointly by M.M. and  
Adm., early in 1918, in six areas, covering whole country. Obj. To advise Steel Superintendent for the area, in carrying out control of steel rollings and arranging rolling programmes. Repr. Principal steel manufacturers in area. Ref. B.T.J., 21st Feb. 1918, p. 209.  
STORAGE OF FILLED GUN AMMUNITION COMMITTEE.— App. by  
M.M. in 1916. Obj. To investigate and advise upon methods of storage. Repr. M.M., H.O., and others. Ref. C<1. 8609, p. 4.  
STORES CENTRAL COMMITTEE.

—  
App. by Finance Department of  
M.M. in 1917. Obj. To take charge of custody and accounting for all munitions, except explosives. Repr. Official and expert. Ref. Cd. 9005, p. 79 ; Cmd. 325, p. 112.  
STORES CONCENTRATION. INTER-DEPARTMENTAL COMMITTEE.

—  
-UP- jointly by Disposals Board (q.v.) and other Government  
Departments concerned. Obj. To secure concentration of surplus stocks in a few depots. Repr. The Board, Departments concerned. Ref. Cmd. 1412, p. 7. Still in existence early in 1922.  
SUBSTITUTION DEPARTMENTAL COMMITTEES (INVESTIGATING,  
PLACING, AND CENTRAL). App. by M.M.. apparently in 1919.  
Obj. To carry out substitution of ex-service for non-service men within Department by discovery of suitable posts (INVESTIGATING COMMITTEE), providing suitable candidates for them (PLACING COMMITTEE), and dealing with disagreements between the two other Committees (CENTRAL COMMITTEE). Repr. M.M. and others. Ref. Lytton Committee, 1st Interim Report, pp. 4. 5 (H.M.S.O., 1923). Diss. At or before termination of M.M. See also M.L.  
SULPHUR COMMITTEE. App. by M.M., May 1 017. Obj. To carry out arrangements for purchase of supplies of Sicilian sulphur from Italian Government and distribution to consumers. Repr. M.M.. R.A.. B.T., CO.. F.O.. In.O. Ref. B.T.J., 26th Sept. 1918, p. 413.  
SULPHURIC ACID AND FERTILIZER TRADES, POST-WAR  
POSITION, DEPARTMENTAL COMMITTEE.

—  
App. by M.M., Jan.  
1917, after consultation with B.T. Obj. To consider post-war position of trades, and effects of war-time erections of plant. Repr. M.M., B.A., R.T., M.F., L.G.B., manufacturers. Ref. Cmd. 23. Diss. Reported Feb. 1918.  
SULPHURIC ACID TRADE ADVISORY COMMITTEE.

—  
App. by M.M.  
in 1917 or 1918. Obj. To assist M.M. in determining costs, prices, &c, under control. Repr. Sulphuric Acid Trade. Ref. B.T.J., 3rd Oct. 1918, p. 425.  
SUPERPHOSPHATE ADVISORY COMMITTEE.

## Notes on "Civil Aviation"

—  
App. presumably by  
M.M. prior to 1918. Obj. To advise generally on production of superphosphate.  
Repr. Not stated. Ref. Cmd. 185, 1919, p. h i.  
TEXTILE MACHINERY.

—  
See under Priority, Munitions. Sub-Committees.  
TIME-WORKERS.

—  
See Rates of.  
TIN, INTER-ALLIED EXECUTIVE.

—  
App. by Allied Governments,  
Sept. 1918, apparently to work in connexion with M.M. Obj. To distribute  
supplies equitably and prevent unnecessary competition. Repr. Allied  
Governments. Ref. Cmd. 325. p. 114.  
T.N.T. POISONING COMMITTEE.

—  
App. by M.M., Oct. 1916. Obj. To  
co-ordinate results of inquiries, advise on administrative action, and draw  
up rules for protection. Repr. M.R.C., medical and other experts. Ref.  
Cd. 8825, p. 85.  
TRADE UNION" ADVISORY COMMITTEE. MINISTRY OF MUNITIONS.

—  
App. by M.M., Aug. 1917, superseding Labour Advisory Committee,  
National (q.v.). Obj. To advise M.M. on various questions  
affecting labour and T.U.'s in regard to munitions. Repr. Munitions  
T.U.'s, the Committee being divided into three panels for Engineering  
(skilled workers), Shipbuilding (skilled workers), and General Labour.  
Ref. Cole, p. 152 ; L.Y.B.. 1919, p. 104.  
(Following difficulties as to the position of women on the General  
Labour panel, a separate Committee (see below) was established for them.)  
TRADE UNION NEGOTIATING COMMITTEE.

—  
App. by T.U.'s represented  
at Treasury Conference. Mar. 1915. Obj. To prepare detailed  
proposals on suspension of T.U. restrictions for negotiation with the  
Government. Repr. T.U.'s concerned. Ref. Cole, p. 70. Diss. At  
close of Conference.  
TRADE UNION WOMEN'S ADVISORY COMMITTEE.

App. by MM..  
Nov. 1917, following difficulty as to the position of women on the General  
Labour Panel of the Trade Union Advisory Committee. Obj. To advise  
M.M. on all questions of women's work on munitions. Repr. Women's  
T.U.'s in munitions industries. Ref. Cole, p. 70; L.Y.B., 1919, p. 104.  
TRAMWAYS COMMITTEE.

—  
See B.T.  
TRENCH WARFARE, CHEMICAL, COMMERCIAL. MINES. RESEARCH,  
ADVISORY COMMITTEES.

—  
App. by M.M., probably in  
1915 and 1916. Obj. To advise and assist Trench Warfare Department of M.M. in these subjects. Repr. Presumably largely  
expert (scientists,  
business nu n. &c). Ref. Cd. 8741, p. 11.  
TRIBUNALS. APPEAL, MUNTIONS.

—  
App. by Lord Chancellor and

## Notes on "Civil Aviation"

in Scotland Lord President of Court of Session, about Feb. 1916. Obj. To hear appeals from decisions of Munitions Tribunals on questions of law or mixed law and fact. Repr. To consist of Judges specially appointed. Ref. L.G., Mar. 1916 (Appendix). Diss. As with General and Local Tribunals or en rlier.

TRIBUNALS, GENERAL MUNITIONS. App. by M.M.. under M.W.A., 1915, in summer of 1915, reorganized Feb. 1916, and transferred to M.L. under Restoration of Pre-War Practices Act. Aug. 1919. Obj. To deal with offences and other questions under M.W.A.'s, not dealt with by Local Munitions Tribunals, and matters referred to them by M.M. from Local Tribunals, and, after the War. with cases from Local Munitions Tribunals under Wages (Temporary Regulation) and Restoration of Pre-War Practices Acts. Repr. Independent Chairman, appointed by M.M.. and two or four assessors representing employers and workpeople, the M.W.A., 1916 providing for creation of panels of assessors and for presence of woman assessor on workpeople's side in cases affecting women. Ref. P.G.A., 1915 and 1916; L.G.. Mar. and April 1916 (Statutory Orders printed in Appendices). Diss. About Sept. 1920 on expiry of Wages (Temporary Regulation) Act and close of work under Restoration of Pre-War Practices Act. TRIBUNALS, LOCAL MUNITIONS.

App. by M.M., as with General Munitions Tribunals. Obj. To deal with various offences under M.W.A.'s, applications for leaving certificates, and, after the War. with disputes under Wages (Temporary Regulation) and Restoration of Pre-War Practices Acts. Repr.. Ref.. Diss. As with Tribunals, General Munitions (q.v.). See (ils.) H.C., No. 185, 1921, p. 37.

(The Scottish and Irish General and Local Tribunals were appointed under separate Orders, but otherwise were the same as in England.) VALUATIONS COMMITTEE. App. by M.M. in winter of 1915-16 and subsequently retained by Hoard of Inland Revenue. Obj. To advise as Committee of experts in dealing with values of buildings, plant and machinery set up in Controlled Establishments. Repr. Auctioneers, civil engineers, (state agents, surveyors, and Receiver of Crown Lands. Ref. T. 18th Aug. 1917, p. i.

WAGES OF SKILLED TIME-WORKERS.

See Rah-, of.  
WALTHAM ABBEY.

See Gretna and Waltham Abbey.

WARBLE FLY COMMITTEE. App. by M.M. in 1917. Obj. To circulate information regarding the warble fly. and conduct trials of dressings for their destruction. Repr. Apparently B.A., B.A.(Sc), I. A.T.I. and others. Ref. Cmd. 1917. p. 56. Diss. Presumably replaced by Warble Ely Pest Committee, duly 1918 (see W.O.). See also B.A.

WAR BONUS 12%.—See Arbitration Tribunals.

WAR MUNITION VOLUNTEER SCHEME. App. by M.M.. June 1915.

Obj. To secure voluntary enrolment of skilled workers, for munitions work in any controlled establishment at choice of M.M.. two hundred Munitions Work Bureaux being established temporarily for enrolment. Kepr. Skilled workers. Ref. L.G., July 1915; Cole, pp. 80, 81. Diss. At or after close of war.

WELFARE DEPARTMENT.

See Health and Welfare.  
WELFARE. WORKS' COMMITTEES.

## Notes on "Civil Aviation"

App. in individual factories

during the War, some as result of Welfare campaign, others being Workers' Committees initiated by the workpeople, independently of or in consultation with the management, to organize welfare work and raise funds (see Cmd. 8570, p. 10), representing both male and female workers in various departments (see Cmd. 8570. p. 10). Obj. To secure co-operation of management and workpeople in welfare work within the factory. Repr. Management (in many cases), workpeople (male and female). Ref. Cmd. '5 10, p. 34. The movement was probably not entirely new, but received a great impetus owing to the War and was introduced for the first time in many factories. WOMEN'S SERVICE COMMITTEE.

—  
App. by Health of Munition

Workers' Committee in 1915 or 1916. Details lacking. Ref. Confidential Report (copy in Imperial War Services Museum Library, Women's Work Section). Diss. Reported before end of 1916. WOMEN.

—  
See also Arbitration. Trade Unions.

WOOL. BRITISH AUSTRALIAN, REALIZATION ASSOCIATION.—  
This was an independent company, formed in 1920, which took over from M.M. liquidation of remaining Government stocks of wool. It represented Australian wool growers who formed a directorate. An Australian Wool Council of 18 representing the growers of all the states of the Australian Commonwealth was formed to assist the Association. Similar organizations were contemplated for New Zealand and other wools. See Cmd. 1368, pp. xv, xvi ; B.T.J., 20th Jan. 1921, p. 69. WOOLWICH, ROYAL ORDNANCE FACTORIES, COMMITTEE OF INQUIRY.

—  
App. by M.M., July 1918. Obj. To report on work of factories, with special reference to efficiency, and suggest improvements. Repr. Parliament, M.M., Adm., W.O., engineers, National Shell Factories, accountants. Ref. Cmd. 229. Diss. Mar. 1919. WORKS' BOARD, MUNITIONS.

—  
App. by M.M., Feb. 1917. Obj. To examine proposals for, and supervise, extensions of Controlled Establishments. Repr. Official and expert. Ref. H.C., No. 132, 1918, p. 7. Diss. After the War, presumably. ZIRCONIUM.

—  
See S.I.R.

## RECONSTRUCTION - UK post WW1

### ENGINEERING TRADES (NEW INDUSTRIES) COMMITTEE.

---

App. by M.R., Dec. 1917.

Obj. To prepare list of engineering products, not adequately produced in U.K. before the War with special reference to labour required and to make recommendations for post-war establishment, &c. Repr. Employers in engineering and allied trades. Ref. Cd. 9226. Diss. Dec. 1918.



ENGINEERING TRADES (NEW INDUSTRIES) COMMITTEE, BRANCH COMMITTEES.

---

App. by main Committee early in 1918.

Obj. To deal with individual branches of the industry. Repr. Employers in branches concerned. Ref. Cd. 9195, 9226.

Diss. Late in 1918.

The branches in question included:

- a) Agricultural
- b) Leather-manufacturing,
- c) Paper-making,
- d) Printing,
- e) Printers' General
- f) Textile (Manchester)
- g) Textile (Nottingham)
- h) Wire
- i) Miscellaneous Machinery
- j) Aircraft
- k) Electrical Apparatus
- l) Hollow-ware, &c.
- m) Light Section Rolling and Drawing,
- n) Machine Tools,
- o) Motor Industry,
- p) Scientific Instruments.

ENGINEERING TRADES (NEW INDUSTRIES) COMMITTEE, LABOUR PANEL.

---

—  
App. by M.R. in 1917. Obj. To advise on all matters affecting labour interests arising out of Committee's work. Rejr. Labour Organizations (men's and women's). Ref. Cd. 9195. Diss. Dec. 1918.

ESSENTIAL INDUSTRIES BOARD, CONSTITUTION SUB-COMMITTEE.

---

—  
App. by Section III of R.A.C. in 1918. Obj. To report on appropriate constitution for the Board, as recommended by Commercial and Industrial Policy Committee. Repr. Not stated. Ref. Cmd. .325, p. 308. Diss. Reported during 1918.

## TRADE and Mines Department War Office - UK

ENGINEERING TRADES AFTER THE WAR, DEPARTMENTAL COMMITTEE of.

---

App. by B.T., Mar. 1916, as Joint Committee for Iron. Steel and Engineering, and reconstituted for Engineering only, July 1916. Obj. To consider position and necessary safeguards of trades after the War. Repr. Prominent engineering and other employers. Ref. Cd. 9073. Diss. Mar. 1917.



## Appendices

Appendix A - the organisation of The British Empire and Britain -1924-1926	1329
DEPARTMENT OF NATIONAL DEFENCE - ROYAL CANADIAN AIR FORCE branch	1348
Appendix - US Council in Canada 1924-1926	1349
Appendix - The Air Navigation Directions (A.N.D.)	1350
Air Navigation Directions (A.N.D.) 1, 1920	1350
Air Navigation Directions (A.N.D.) 2, 1921	1350
Air Navigation Directions (A.N.D.) 3, 1922	1350
Air Navigation Directions (A.N.D.) 4, 1923	1351
Air Navigation Directions (A.N.D.) 5, 1924	1351
Air Navigation Directions (A.N.D.) 6, 1925	1351
Air Navigation Directions (A.N.D.) 7, 1926	1351
Air Navigation Directions (A.N.D.) 8, 1927	1351
Air Navigation Directions (A.N.D.) 9, 1928	1351
Air Navigation Directions (A.N.D.) 10, 1929	1351
Air Navigation Directions (A.N.D.) 11, 1930	1351
Air Navigation Directions (A.N.D.) 11B, 1931	1351
Air Navigation Directions (A.N.D.) 11C, 1932	1351
The Air Navigation Directions (A.N.D.) 11C	1353
Appendix : Documents Listed / referenced	1354
Appendix : Air Board Staff- Air Foremen / Mechanic lists	1354
Appendix B1: Air Foremen / Mechanics employed during 1919	1354
1918 - 1919 : source ref: report of the Auditor General of Canada, 1918 - 1919	1354
Appendix B2 : Air Foremen / Mechanics employed during 1920	1354
1919 - 1920: source ref: report of the Auditor General of Canada, 1919 - 1920	1354
Appendix B3 : Air Foremen / Mechanics employed during 1921	1355

1921 - 1922: source ref: report of the Auditor General of Canada, 1920-1921	1355
Appendix C : "International Air Traffic Association" [ATA] members : 1919	1361
Appendix D : International Air Transport Association, 1944/5 members	1361

## APPENDIX A - THE ORGAINSATON OF THE BRITISH EMPIRE AND BRITAIN -1924-1926

### THE BRITISH EMPIRE

The British Empire consists of the Kingdom of Great Britain and Northern Ireland, six self-governing Dominions, India and the Crown colonies and protectorates. Its total area is 13,355,426 sq. miles, and its total population 449,583,000

#### THE KINGDOM OF GREAT BRITAIN

Consisting of England and Wales and Scotland, is governed directly by Parliament, which is also supreme over Northern Ireland, the Crown Colonies, India, and to a much more limited extent over the Dominions. Prime Minister, Rt. Hon. Stanley Baldwin. Northern Ireland has its OWN Parliament for domestic matters. Premier, Rt. Hon. James Craig; Governor, the Duke of Abercorn.

#### DOMINIONS

(1) The Dominion of Canada, including the Provinces of Alberta, British Columbia, Manitoba, New Brunswick, Nova Scotia, Ontario, Prince Edward Island, Quebec and Saskatchewan. Governor-General, Lord Byng of Vimy;

Prime Minister, Rt. Hon. W. L. Mackenzie King. Capital, Ottawa, Ontario.

(2) The Dominion of Newfoundland. Capital, St.

John's; Gov. -Gen., Sir William L. Allardice; Prime Minister, W. S. Monroe.

(3) The Union of South Africa—including the Cape Colony, Natal, the Transvaal and Orange River Colony

Capital, Capetown. Gov. -Gen., Earl of Athlone;

Prime Minister, Gen. Hertzog.

(4) The Commonwealth of Australia, including New South Wales, Victoria, Queensland, South Australia,

West Australia and Tasmania. Capital, Melbourne, (territory has been secured for a Federal Capital at Yass Canberra). Gov. -Gen., Baron Baird of Stonehaven;

Prime Minister, Stanley M. Bruce.

(5) Dominion of New Zealand. Capital, Wellington.

Gov. -Gen., Gen. Sir Charles Fergusson, Prime Minister, Hon. J. G. Coates.

(6) The Irish Free State was inaugurated on December 6, 1922.

Capital, Dublin; Gov. -Gen., Timothy Healy;

President of the Dail Cabinet, William T. Cosgrave.

(7) Southern Rhodesia. Capital, Salisbury; Gov., Sir John R. Chancellor, K.C.M.G.

#### 1926 : Great Britain: THE BRITISH GOVERNMENT

There were few changes in the Baldwin Ministry in 1925. At the General Election on October 29, 1924, the Conservatives had been returned with a decisive majority over the Labor and Liberal parties combined.

## Notes on "Civil Aviation"

The figures were:—Conservatives, 412; Labour 152; Liberals 42; Constitutionalists, 3; others 6. During the year the Conservatives suffered several reverses at bye-elections, but not sufficient to affect their command of the House of Commons. Only four women were elected in October 1924, as compared with eight in the previous Parliament. As in the administration of Ramsay Macdonald, one woman was included in the Ministry. As yet no woman has enjoyed Cabinet rank in England.

The large majority of the Conservatives did not accurately reflect the politics of the voters. The Conservatives had 412 members of Parliament for a popular vote of 8,000,000. The Labour Party had 187 Members with a popular vote of 5,500,000; and the Liberals 42 Members with a popular vote of 3,000,000.

The Conservatives thus secured one member for every 20,000 Conservative votes.

The Labour Party one Member for each 36,000; and the Liberals had to secure 76,000 votes for each Member elected.

The House of Commons, as now constituted, has 615 members, as compared with 707 in that elected in December, 1918, and 670 the number before the passing of the Representation of the People Act of 1918, the Act which besides increasing the number of members, gave the vote, under certain restrictions, to women.

The Irish representation is now only 13 (all from Northern Ireland), instead of 105: owing to the erection of the Irish Free State which embraces the three Southern Provinces and which sends no members to the British House of Commons.

The House of Commons has never been able to seat all its members.

On the floor of the House there are 346 seats and the side gallery, set apart for Members, seats 82—making a total of 450 seats for 615 members.

The Strangers' Galleries will seat in all 209 persons, but if a member occupies a seat in them he is debarred from speaking.

The House of Lords, in 1924 had 738 members, of whom 104 held peerages created since 1916.

26 peerages were held by women, whom the House of Lords has so far excluded from membership. The 28 peers, elected by the Irish peers for life, were not affected by the Government of Ireland Act of 1922. The composition of the House of Lords is as follows:—Hereditary peers, 661; Irish elected life peers, 28; Scottish peers, elected for each new parliament by the Scottish House of Lords, which comes together at Holyrood, solely for this purpose, 16; Archbishops, 2; Bishops, 24; Lords of Appeal—(life peers created to act as Law Lords), 6. In 1925 there were 121 peers, including several minors, who had not taken their seats.

No title attaches to office in Cabinet or Administration. The title Right Honourable is given to all Privy Councillors. These are appointed for life, and every member of the Cabinet, who is not already of the Privy Council, is made a Privy Councillor.

The title Honourable is given to every member of the House of Commons.

### THE OFFICE OF PRIME MINISTER

Prime Minister—Rt. Hon. Stanley Baldwin

Until 1894 the office of the Prime Minister was officially unknown. It had developed as a consequence of the establishment of responsible government under a party leader, but the Prime Minister, as such, had no official rank and no precedence. The first official recognition was in the form of a mention in the Court Circular, and it was 1905 before, by Royal Warrant, the Prime Minister was given precedence next after the Archbishop of York. There is no salary attached to the office of Prime Minister, but the holder usually combines some other office which carries a salary. Mr. Baldwin is First Lord of the Treasury, an office usually held by the Prime Minister—Mr. Ramsay MacDonald was also Secretary of State for Foreign Affairs, but accepted only one salary for the two offices. In precedence the Prime Minister now has his place between the Archbishop of York and the Lord Chancellor of Ireland, and precedence over every member of his Government except the Lord Chancellor.

### THE GOVERNMENT DEPARTMENTS

#### THE TREASURY

Chancellor of the Exchequer—Rt. Hon. Winston Churchill.

First Lord of the Treasury—Rt. Hon. Stanley Baldwin

Financial Secretary to the Treasury—Walter Guinness

Parliamentary Secretary to the Treasury— Rt. Hon. B. M. Eyres-Monsell, (£2,000)

Lords Commissioners of the Treasury—Whips, £1,000 each. Major G. Hennessy; Major W. Cope; F. C.

Thomson, K.C.; Capt. Viscount Curzon, (unpaid);

Viscount Stanley, (unpaid)

Assistant Gov. Whip (unpaid), Capt. H. D. R. Margesson.

The Treasury, of which the Chancellor of the Exchequer is the political head, provides the means for meeting the charges for the military, naval, and civil services.

## Notes on "Civil Aviation"

The Parliamentary heads of each of the spending and administrative departments of the Government are responsible for the estimates for their respective departments ; but it is the duty of the Chancellor of the Exchequer, with the permanent Secretary of the Treasury, to check all these estimates before they are submitted to the House of Commons in Committee of Supply. The Cabinet becomes responsible for estimates which have been submitted to Parliament, and the rejection or reduction of an estimate by the House of Commons is tantamount to a defeat of the Government. The duties which bring the Chancellor of the Exchequer most prominently before the country, are those in connection with the Budget. The first Lord of the Treasury is one of its Parliamentary heads ; but the duties of the First Lord are little more than nominal, and the office is usually held by the Leader of the House of Commons. The Parliamentary Secretary to the Treasury is the official title of the Government whip in the House of Commons. The Junior Lords are his assistants. The Financial Secretary represents the Treasury in the House of Commons.

### THE HOME OFFICE

Secretary of State for Home Affairs—Rt. Hon. Sir William Joynson-Hicks.

Under Secretary—Godfrey Locker-Lamson, (£1,500)

The Home Department has the control of:

1. the London police force, and also
2. the oversight of the police forces in the counties and municipal boroughs ;
3. responsible for the administration of the factory code, and the laws relating to mining.
4. and, generally speaking, the Department is responsible for the internal peace of the country.

Prisons, convict establishments, criminal lunatic asylums, executions, and all matters connected with the post-judicial execution of the criminal law, come within the purview of the Home Office.

THE AIR MINISTRY Secretary of State for Air—Rt. Hon. Sir Samuel J. G. Hoare.

Under Secretary—Major Sir. Philip Sassoon.

At the close of the war the Air Ministry was made part of the War Department. So much objection was raised to this arrangement that in 1921 it was again erected into a separate Department and in 1923, when the first Baldwin Cabinet was formed, the Secretary was included in the Cabinet, as was also the case in both the Labour and Conservative Cabinets of 1924.

### THE FOREIGN OFFICE

Secretary of State for Foreign Affairs—Rt. Hon. J. Austen Chamberlain.

Under Secretary—Rt. Hon. Ronald McNeill, (£1,500)

All diplomatic intercourse is conducted by the Secretary of State for Foreign Affairs, who is usually of the House of Lords. The office is next in rank and importance to that of Premier, and is sometimes held in conjunction with that office. Ambassadors and consuls receive their instructions from the Foreign Office.

Foreign ambassadors in London have their audiences with the Secretary of State, and he also conducts the negotiations for international treaties. The Under Secretary represents the Department in the House of Commons.

### THE COLONIAL OFFICE

Secretary of State for the Colonies and Dominion Affairs—Rt. Hon. Lt.-Col. L. C. M. S. Amery.

Under Secretary—Hon. W. G. Ormsby-Gore, (£1,500)

The Colonial Office dates back to 1660, when a Committee of the Privy Council was appointed for the Plantations, as the Colonies were then called. This Council was continued until 1768, when colonial affairs were placed under the control of a Secretary of State.

When the United States secured their independence in 1783, the office of Colonial Secretary was abolished, and colonial affairs were managed from the Home Office.

From 1794 to 1854 the colonies were under the War Department.

## Notes on "Civil Aviation"

In 1854 a separate Secretaryship of State for the Colonies was created.

In August, 1907, the Colonial Office was organized in 3 departments;

- (1) Dominion Department, concerned exclusively with the self-governing colonies
- (2) Crown Department concerned with Crown Colonies; and
- (3) Department having charge of legal and financial business.

In 1925, the premier announced that the Colonial Office no longer correspond to the actual constitutional position within the Empire, and that the conduct of affairs for the Dominions would henceforth be under a separate new Secretaryship of State for Dominion Affairs, but that for convenience the new Secretaryship would be vested in the person of the Secretary of State for the Colonies.

### THE ADMIRALTY

First Lord of the Admiralty—Rt. Hon. Wm. C. Bridgeman.

Civil Lord of the Admiralty—Earl Stanhope, (£1,000)

Parliamentary and Financial Secretary to the Admiralty—

J. C. C. Davidson.

The Admiralty, which has charge of the Royal Navy, is administered by Lords Commissioners. The head of the Department, who is always of the Cabinet, is known as the First Lord of the Admiralty. The other Lords Commissioners or Junior Lords are officers without seats in Parliament, and are respectively at the heads of the departments into which the Admiralty is divided. The foreign movements of ships are at the instance of the Cabinet, the Foreign Office, and the Colonial Office, and it is from these authorities that the Lords of the Admiralty receive their orders. In time of war the orders go from the Cabinet. At other times the movements of vessels are directed by the Foreign Office and the Colonial Office.

### THE BOARD OF TRADE

President of the Board of Trade—Rt. Hon. Sir Philip Cunliffe-Lister.

Parliamentary Secretaries to the Board of Trade—  
Overseas Trade Department, Arthur Michael Samuel,  
(£1,200)

Mines Department, Lt.-Col. G. R. Lane-Fox.

The Board of Trade is in charge of the administration of the laws relating to limited liability companies, and bankruptcy; and it also has the oversight of all matters connected with the mercantile marine, harbours, canals, railways, and street car lines and electric lighting. The importance and range of work of the Board of Trade have been greatly increased since the War.

In 1921, it took over the duties of the Ministries of Food and Shipping.

### THE MINISTRY OF TRANSPORT

Minister—Lt.-Col. Rt. Hon. Wilfred Ashley.

Parliamentary Secretary—Lt.-Col. J. T. C. Moore-Brabazon.

The Ministry of Transport, created during the War to oversee the transportation of war materials and food, has proved of more permanent usefulness than was anticipated. It is proposed to turn over its duties to the Board of Trade, but this has not yet been done.

### LAW OFFICERS OF THE CROWN

Attorney General—Rt. Hon. Sir Douglas McG. Hogg,  
(£7,000 and Fees)

Solicitor General—Sir Thomas Inskip, K.C., (£6,000)



and Fees)

#### OFFICERS OF THE HOUSE OF COMMONS

Speaker—Rt. Hon. J.H. Whitley, (£10,000).

Deputy Speaker and Chairman of Committee of Ways and Means—James Fitzalan Hope, (£2,500).

Clerk of the House—Sir T. Lonsdale Webster, (£1,800).

Serjeant at Arms—Admiral Sir Colin Keppel, (£1,000).

Chaplain to the Speaker—Rev. Canon Carnegie.

Librarian—Austin Smythe.

Rt. Hon. J. H. Whitley, Speaker of the House of Commons, was first elected to his high office in April, 1921, on the retirement of Speaker Lowther. The holder of the office is strictly non-partisan, and is customarily re-elected irrespective of changes of party majorities in the House. A pension (£4,000 a year) is usually voted to a retiring Speaker and he is raised to the House of Lords.

#### THE BRITISH ARMY

Before the Norman Conquest every freeman was bound to bear arms in defence of his country at the call of the King. This national militia was partially, but never wholly, superseded by the feudal system, introduced by William I, under which lands were held in return for units of cavalry and infantry which had to serve for 40 days at the cost of the lord. In addition, kings frequently maintained mercenaries, first out of their private funds and later out of the royal revenues. Parliamentary consent to the maintenance of an army was established in the seventeenth century as a result of a struggle between the Commons and the Stuarts. The standing army became a national institution under James II, and the Mutiny Act, passed at the accession of William III, in 1689, and which has been renewed annually ever since, forms the basis of army discipline, without which a standing army would be impossible.

##### Administration

\ The Army is administered by the Army Council, the President of which is the Secretary of State for War. The other members are the Under-Secretary for War, who is Vice President; the Chief of the Imperial General Staff, the Adjutant General, the Quartermaster General, the Master General of Ordnance, the » Finance Member, and two permanent secretaries of the ! War Office. Only the President and Vice President are political appointments. Both are members of the ;

Ministry which goes out with the resignation of the Prime Minister. The King is ex-officio head of the Air , Council and Commander-in-Chief of the Army.

##### Composition

The Army consists of the Regular Army, the Reserves, the Territorial Army, which has absorbed the two old ^ forces of the Militia and the Yeomanry, and the Royal Marines, which are administered by the Navy but appear on both the army and the navy lists. Enlistment in all these forces in times of peace

is voluntary. The term of service in the regular army is 12 years, of which from 3 to 9 years are spent with the colors and the remainder of the term with the reserves. The usual service is seven years with the colors and five years in the reserve.

### RANK IN THE ARMY

Field Marshal; General; Lieutenant General; Major General; Brigadier General; Colonel; Lieutenant Colonel; Major; Captain; Lieutenant; Second Lieutenant.

### THE BRITISH NAVY

The British Navy, as a national force, dates back to the Tudors, although as early as the ninth century, King Alfred maintained ships of war out of the royal revenues. During the middle ages, and even after the reorganization of the Royal Navy by Henry VIII, naval defence was the duty of the ports and sea-board towns—a duty afterwards commuted into money, and levied by Charles I, under the name of Ship Money, in a manner which helped to bring about the Rebellion of 1642. The Navy entered its modern period under Charles II, and was greatly improved and enlarged under his successor, James II (1685-88). It then included 173 ships of a total tonnage of 101,892 tons, carrying, when in commission, 42,003 men and 6,390 guns. During the century which followed, many abuses crept into its management, and in 1797 occurred the mutinies of Spithead and the Nore, which brought about many reforms in the treatment and feeding of the sailors. At this time (the Napoleonic Wars) the Navy included 411 ships, totaling 402,555 tons. The nineteenth century saw the change from sail to steam and from wood to iron and steel with the consequent steady growth in tonnage, culminating in the modern Grand Fleet. At the present time the Royal Navy is governed by the Board of Admiralty at Whitehall, headed by the First Lord of the Admiralty who is a member of the Cabinet. In addition the Board includes 4 sea lords, the Deputy Chief of Naval Staff and the Assistant Chief, one Civil Lord, a Parliamentary and Financial Secretary and a permanent Secretary. The Civil Lord and the Parliamentary Secretary are members of the Ministry. The King is, ex-officio, Admiral of the Fleet.

The relative rank of officers is Admiral of the Fleet, Admiral, Vice-Admiral, Rear-Admiral, Commodore, Captain, Commander, Lieut-Commander, Lieutenant, Sub-Lieutenant, Commissioned gunners, boatswains, telegraphists, etc., Midshipmen.

### THE ROYAL AIR FORCE

The Royal Air Force is administered by the Air Council which consists of the King, as Chief of the Air Force, the Secretary and Under-Secretary of State for Air,—who are President and Vice-President of the Council,—Chief of Air Staff, Member for Personnel, Member for Supply and Research, and Secretary to

the Council.

The Stations of the Air Force are: three in England, one in Northern Ireland, and six abroad. The foreign stations have their headquarters in Northern Africa, Mesopotamia, India, Malta, Palestine, and Trans-Jordania.

The Estimates for the Air Force, for 1925-1926, presented to the House of Commons on February 19, 1925, totalled £21,319,300. This amount included £3,116,700 contributed by the Colonial Office for the Middle East, and £1,320,000 by the Admiralty for the Fleet Arm. The net vote was therefore £15,513,000, as compared with £14,500,000, for 1924-1925. Of this amount £3,412,000 was asked for pay for officers and men and £6,463,000 for research and experiment. The number of men of all ranks provided for in the Vote was 36,000, an increase of 1,000 over the number of 1924-1925. The increase was proportionately small, because, whereas in 1918 it took 81 men to keep one machine in service, in 1923 the figure had dropped to 65 and in 1925 to 51.

In presenting the Estimates, Sir Samuel Hoare stated that it was the intention of the Government to treble the strength of the Air Force over that of 1923, but that even with this rate of increase it would take years to attain numerical equality with that of France, which in 1925 outnumbered the British Force by three to one. In the summer of 1925 the British Force consisted of the equivalent of 54 squadrons, of which 43 were organized as such with 21 flights of an average strength of 6 machines—half the strength of a normal squadron provided for the Fleet Air Arm, or for operation from Coastal bases. Of the 43 squadrons, 25 were stationed at home, 8 in Iraq; 6 in India; and 4 in Egypt and Palestine. The number of completely formed regular squadrons for home defence was 18, a number which will be raised to 26 by March, 1926.

A scheme of Air Reserves, formed of fliers trained at civilian flying schools, was put into operation in 1925. When completed, the force will include 2 reserve squadrons and 4 auxiliary Air Force squadrons, available in time of emergency. In 1925, the Air Department continued to give aid to civilian flying routes.

#### OFFICIAL RANK IN AIR FORCE

Marshal of the Air; Air Chief Marshal; Air Marshal; Air Vice-Marshal; Air Commander; Group Captain; Wing Commander; Squadron Leader; Fleet Lieutenant; Flying Officer; Pilot Officer.

#### ORDERS OF KNIGHTHOOD, Etc.

The Order of Baronets, the lowest hereditary rank, was instituted in 1611; a Baronet is designated "Sir John Smith, Baronet"—usually written Bart. Taking precedence of Baronets are members of The Most

## Notes on "Civil Aviation"

Honourable Privy Council, who are addressed "Right Honourable."

The Order of the Bath, instituted in 1399, and revived in 1725, is divided into three classes—Knights Grand Cross, G.C.B.; Knights Commanders, K.C.B.; and Companions, C.B.

The Order of St. Michael and St. George, instituted in 1818, has also three classes—G.C.M.G., K.C.M.G., and C.M.G.

The Royal Victorian Order, instituted in 1896, has five classes—G.C.V.O., K.C.V.O., C.V.O. Members 4th and 5th classes—M.V.O.

The Order of the British Empire has four classes

—

K.B.E., C.B.E., O.B.E., and M.B.E.

In all Orders of Knighthood the Knights Grand Cross and the Knights Commanders have the prefix "Sir" with the initials of their class following the name.

Companions and Members bear no title, but have the letters C.B., C.M.G., M.V.O., as the case may be, attached to their names.

Knights Bachelors are gentlemen unconnected with any order who have received the honour of Knighthood, and are entitled to the prefix "Sir" and to "Knt." after name. They wear no insignia, and rank immediately after Knights Commander of the Victorian Order.

The following is a list of abbreviations used to indicate Honours and Decorations

K.G.—Knight of the Most Noble Order of the Garter.

K.T.—Knight of the Most Noble Order of the Thistle.

K.P.—Knight of the Most Illustrious Order of St. Patrick.

G.C.B.—Knight Grand Cross of the Most Honourable Order of the Bath.

G.C.S. I.—Knight Grand Commander of the Most Exalted Order of the Star of India.

G. C.M.G.—Knight Grand Cross of the Most Distinguished Order of St. Michael and St. George.

G.C.I.E.—Knight Grand Commander of the Most Eminent Order of the Indian Empire.

G. C.V.O.—Knight Grand Cross of the Royal Victorian Order.

C. I. E.—Companion of the Most Eminent Order of the Indian Empire.

K.C.B.—Knight Commander of the Most Honourable Order of the Bath.

O.M.—Member of the Order of Merit.

K.C.M.G.—Knight Commander of the Most Distinguished Order of St. Michael and St. George.

Knt.—Knight Bachelor.

C.V.O.—Commander of the Royal Victorian Order.

C.B.—Companion of the Most Honourable Order of the Bath.

C.M.G.—Companion of the Most Distinguished Order of St. Michael and St. George.

M.V.O.—Member of the Royal Victorian Order.

K.B.E.—Knight Commander of the Order of the British

## Notes on "Civil Aviation"

Empire.

C. B.E.—Commander of the Order of the British Empire.

O.B.E.—Officer of the Order of the British Empire.

M.B.E.—Member of the Order of the British Empire.

D. S.O.—Companion of the Distinguished Service Order.

I.S.O.—Companion of the Imperial Service Order.

I.S.M.—Imperial Service Medal.

M.C.—Military Cross.

R.R.C.—Royal Red Cross.

V.O.—Victoria Cross

1. The Governor-General of Canada to be styled

" His Excellency " and his wife " Her Excellency."

2. The Lieutenant-Governors of the Provinces

to be styled " His Honour."

3. Privy Councillors of Canada to be styled

"Honourable," and for life.

4. The Solicitor-General to be styled " Honourable

" while in office.

5. Senators of Canada to be styled "Honourable,"

but only during office and the title not to be continued afterwards.

6. The Speaker of the House of Commons to be

styled " Honourable " during tenure of office.

7. The Chief Justice of Canada, the Judges of

the Supreme and Exchequer Courts of Canada,

and the Chief Justices and Judges of the undermentioned

Courts in the several Provinces of

Canada :

—

' Ontario.—The Supreme Court of Ontario.

Quebec.—The Court of King's Bench, the Su-

E

erior Court, and the Circuit Court of the

•istrict of Montreal.

Nova Scotia.—The Supreme Court of Nova

Scotia.

New Brunswick.—The Supreme Court of New

Brunswick.

Manitoba.—The Court of King's Bench and

the Court of Appeal.

British Columbia.—The Court of Appeal and  
the Supreme Court of British Columbia.

Prince Edward Island.—The Supreme Court  
of Prince Edward Island and the Chancery  
Court.

Saskatchewan.—The Supreme Court of Saskatchewan.

Alberta.—The Supreme Court of Alberta.

To be styled "Honourable" during tenure of  
office.

8. The Presidents and Speakers of the Legislatures  
of the Provinces to be styled "Honourable"  
during tenure of office.

9. Executive Councillors of the Provinces to be  
styled " Honourable" while in office.

10. Legislative Councillors in the Provinces not

## Notes on “Civil Aviation”

in future to have that title, but gentlemen who were Legislative Councillors in the Provinces at the time of the Union (1st July, 1867), to retain their title of "Honourable" for life.

The following to be eligible to be personally recommended by the Governor-General for His Majesty's permission to retain the title of "Honourable

(a) Speakers of the Senate and of the House of Commons on retirement after three years of office, not necessarily continuous.

(b) The above-mentioned Chief Justices and Judges on retirement.

Canadian Prime Minister, Secretary of State for External Affairs,—President of the Privy Council,  
 Right Honourable William Lyon Mackenzie King, C.M.G., M.A., LL.B., LL.D., \*  
 Minister of Railways and Canals—Honourable George Perry Graham,  
 Postmaster-General and Acting Secretary of State—Honourable Charles Murphy, B.A., K.C.,  
 Minister without Portfolio—Honourable Raoul Dandurand, LL.D., K.C.  
 Minister of Soldiers' Civil Re-Establishment—Honourable Henri Severin Beland, B.A., M.D.,  
 Minister of Justice and Attorney General—Honourable Ernest Lapointe, B.A., LL.B., K.C.,  
 Minister of Finance and Acting Minister of Trade and Commerce—  
 Honourable James Alexander Robb  
 Minister of the Interior, Superintendent General of Indian Affairs, Minister of Mines, Acting Minister  
 of Immigration and Colonization—Honourable Charles Stewart  
 Minister of Agriculture—Honourable William Richard Motherwell,  
 Minister without Portfolio—Honourable John Ewen Sinclair  
 Minister of Public Works and Acting Minister of Labour—  
 Honourable James H. King, M.D., C.M., F.A.C.S  
 Minister of National Defence—Honourable Edward Mortimer Macdonald, K.C., LL.B  
 Minister of Marine and Fisheries,—Honourable P. J. Arthur Cardin

## DEPARTMENTS OF GOVERNMENT - Canada 1924-26

## CIVIL SERVICE COMMISSION

The Civil Service Commission was constituted by the Civil Service Act of 1908 (7-8 Edward VII., chap. 15) which introduced the merit system in the administration of a portion of the personnel of the Civil Service at Ottawa. The jurisdiction of the Commission was extended in 1918, when practically the entire personnel of the public service was placed under its control. As at present constituted, the Commission is administered by three Commissioners, who may be removed from office, only on joint resolution of the Senate and House of Commons.

Commissioners, Hon. W. J. Roche, M.D.,

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Michel G. LaRochelle, K.C., B.A., LL.D.. 6,000

Clarence Jameson 6,000

Secretary, Wm. Foran 5,100

Asst. Secretary and Chief Examiner, Charles

H. Bland, B.A 4,440

Chief, Organization Branch, C. V. Putman,

B.A., B.Sc 4,200

Head French Examiner, J. R. A. Baril, B.A. . 4,020

Head Clerk, Minutes and Records, Miss E. E.

## Notes on "Civil Aviation"

Saunders, M.A 2,880

### EXTERNAL AFFAIRS

The Department of External Affairs was constituted in May, 1909 (8-9 Edward VII, Chap. 13.) and placed originally under the Secretary of State. It has charge of the administration of all external affairs pertaining to Canada, as enacted between the Government of Canada, and the Government of any other country. Since April, 1912, the Department of External Affairs has been under the control of the Prime Minister, who carries the added title of "Secretary of State for External Affairs." An important duty of the Department is the issuing of passports to British born subjects or to persons naturalized in the Dominion.

Secretary of State for External Affairs, Rt.

Hon. William Lyon Mackenzie King,

C.M.G., M.A., LL.B., LL.D., Prime Minister

Permanent Under-Secretary of State for External Affairs, O. D. Skelton, Ph.D., M.A.

Assistant Under-Secretary of State for External Affairs, W. H. Walker, C.M.G.,  
I.S.O., B.A

Counsellor, Jean Desy, LL.L

Chief Clerk and Accountant, F. M. Baker.

.

Agent of The Department of External Affairs  
in Washington, U. S. A.

M. M. Mahoney, British Embassy

High Commissioner's Office

London, England

Canada House, Trafalgar Square, London, S.W.I.

High Commissioner, Hon. P. C. Larkin

Secretary, Lucien Pacaud

Assistant Secretary, E. P. Luke

Paris Agency Office

17 Boulevard des Capucines, Paris.

Commissioner General, Phillippe Roy

Secretary, Pierre Dupuy

### INTERIOR

The Department of the Interior was constituted in 1873, (36 Vic. Chap. 4), and originally had jurisdiction over the Northwest Territories, Dominion, Ordnance and Admiralty Lands, the Geological Survey and over the Indians. The scope of its duties in administering and developing the federal public domain has been greatly widened by the growth of the Dominion, particularly of the West.

The area under administration exceeds 2,000,000 square miles. Specialized management of the varied natural resources of these territories is furnished through ten major divisions of the Department including the Dominion Lands Branch, Forest Service, National Parks, Water Power and Reclamation Service, North-West Territories, Topographical, Geodetic and Boundary Surveys, Dominion Observatories,

## Notes on "Civil Aviation"

Natural Resources Intelligence Service, together with the financial and general administrative units. In addition to the direct management of the federally-controlled territories and resources, the several services of the Department provide the necessary facilities for broad national co-operative action where such is required to promote the efficient development and conservation of the Dominion's natural assets.

Minister of the Interior, Hon Charles Stewart \$10,000

Private Secretary, Ford Pratt

Deputy Minister, W. W. Cory, C.M.G 8,000

Assistant Deputy Minister, R. A. Gibson. . . 5,100

Secretary, J. M. Roberts 4,020

Financial Controller, P. Marchand 4,020

Departmental Solicitor, K. R. Daly, B.A .... 3,840

### JUSTICE

The Department of Justice was constituted in 1867 (31 Vic. Chap. 39), to superintend the administration of justice not within the jurisdiction of the Provinces, and to supervise the prison system of the Dominion. Its officers also act as legal advisers to the Crown, and to the several departments of the public service.

Minister of Justice and Attorney-General

of Canada, Hon. Ernest Lapointe \$10,000

Minister's Private Secretary, J. Emile Tremblay  
3,960

Solicitor-General, Hon. Lucien Cannon 7,000

Solicitor Gen's Private Sec., (vacant)

Deputy Minister, W. S. Edwards

Asst. Deputy Ministers, J. Chisholm, J. A.  
Renaud

Legal Officers:

J. Chisholm, K.C \$6,000

J. A. Renaud, K.C 6,000

J. Philip Bill 5,500

M. F. Gallagher, B.A 5,000

C. P. Plaxton 5,000

F. P. Varcoe, B.A 4,620

Ed. Miall 4,200

Rene de Salaberry, B.A., LL.B., K.C 3,120

Deputy Minister's Secretary, R. F. Harris . . . 3,300

Chief Account, and Gen'l Regist'r,

J. E. Narraway, B.A 4,000

Chief, Clemency Branch, M.F.Gallagher, B.A. 5,000

Purchasing Agent, G. A. Dillon 3,780

Remission Registrar, W. J. Wright 2,280

The Supreme Court of Canada

Chief Justice, Hon. F. A. Anglin 15,000

Puisne Judges, Hon John Idington, Rt. Hon.

Lyman Duff, Hon. P. B. Mignault, Hon.

E. L. Newcombe, Hon. T. Rinfret. . . each 12,000

Registrar of Supreme Court and Editor of  
Supreme Court Reports, E. R. Cameron,



## Notes on "Civil Aviation"

K.C 6,000

Reporter, C. H. Masters, K.C 4,000

Civil Law Reporter, Armand Grenier, K.C. . 3,600

The Exchequer Court of Canada

President, Hon. A. K. MacLean 10,000

Puisne Judge, Hon. L. A. Audette 9,000

Registrar of Exchequer Court and Editor of

Exchequer Court Reports, C. Morse, D.C.L. 5,000

Law Reporter, A. W. Duclos, B.A., B.C.L.,

K.C 3,600

### LABOUR

The Department of Labour was constituted in 1900, (63-64 Victoria, Chap. 24). Its functions comprise the following: the administration of the Industrial Disputes Investigation Act, 1907, which provides for the establishment of boards of conciliation and investigation in connection with certain classes of industrial disputes; the administration of the Conciliation and Labour Act (Chap. 96, R.S.C. 1906), under which the services of Departmental officers are utilized in the adjustment of labour disputes; the administration of the Fair Wages Policy of the Government of Canada, which provides for the observance of the current wages rates and hours of the district in the case of Government contracts and works aided by grants of Dominion public funds; the administration of the Employment Offices Co-Ordination Act, under which, in co-operation with the various provincial governments, free public employment offices are maintained in 67 centres; the administration of the Technical Educational Act, which provides for grants to the Provinces for the purpose of promoting and assisting technical, vocational, and industrial education; the administration of the Government Annuities Act, 1908, which authorizes the sale of government annuities; the administration of the Combines Investigation Act, 1923, which provides means for the investigation of combines, monopolies, trusts and mergers detrimental to the public interest ; the collection and publication of statistics of wages, hours, employment, prices, cost-of-living, strikes, lockouts, industrial agreements, industrial accidents, labour organization, and organization in industry, commerce and the professions; the publication of an official monthly journal, the Labour Gazette, also of bulletins of information on industrial and labour subjects; the compilation and publication of reports containing texts of all the labour laws of the Dominion Parliament and of the provincial legislatures; correspondence etc. connected with the International Labour Organization (League of Nations); and the preparation of information connected with the annual sessions of the International Labour Conference. •  
Acting Minister of Labour, Hon. J. H. King, \$10,000  
Deputy Minister, H. H. Ward 6,000  
Assistant Deputy Minister, Gerald H. Brown 4,500

## Notes on "Civil Aviation"

Director of Employment Service, R. A. Rigg. 4,200  
Director of Technical Education,  
A. W. Crawford 4,200  
Superintendent of Government Annuities,  
S. T. Bastedo 4,440  
Registrar of Combines Investigation Act,  
F. A. McGregor 3,660  
Chief of Statistical Branch, C. W. Bolton. . . 3,300  
Chief of Labour Intelligence Branch,  
F. J. Plant... 3,600  
Accountant, E. A. Thomas 3,24

### MARINE AND FISHERIES

The Department of Marine and Fisheries was constituted in July, 1867, (31 Vic. Chap. 57). It is charged with the establishment of aids to navigation such as light-houses, fog alarms, buoys, beacons, submarine bells, etc., the construction and maintenance of the River St. Lawrence Ship Channel; the operation of harbours, wharfs, piers, and breakwaters and all matters affecting the merchant marine. Fish culture has been encouraged by the construction and equipment of fish breeding establishments in various parts of the country and the proper safe-guarding of the inland fisheries by necessary legislation. The Meteorological Service and the Life-Saving Service are under this department. Minister of Marine and Fisheries, Hon. P. J. A. Cardin \$10,000  
Private Secretary to Minister, Antonio Lussier 3,360  
Deputy Minister of Marine and Fisheries, A. Johnston 8,000  
Assistant Deputy Minister of Marine and Fisheries, H. E. A. Hawken 4,800  
Executive Assistant, F. McVeigh 4,200  
Jr. Departmental Solicitor, F. R. A. Bourgault.  
Chief Hydrographer and Director of Tidal and Current Surveys, Captain F. Anderson . . . 4,800  
Director of Radiotelegraphy, C. P. Edwards, O.B.E 4,500  
Chief, Central Registry Branch, J. E. McClenaghan 3,600  
Chief Accountant, A. Boyle.  
Act. Chief Engineer, L. E. Cote, C.E., B.A.Sc.  
Superintending Engineer, River St. Lawrence Ship Channel, V. F. W. Forneret, C.E., B.A.Sc., M.E.I.C.  
Purchasing and Contract Agent, G. H. Flood.  
Commissioner of Lights, J. G. Macphail, B.A., B.Sc.  
Superintendent Masters' and Seamen's Branch, B. F. Burnett.  
Director of Pilotage, Capt. G. E. L. Robertson.  
Dominion Wreck Commissioner, Capt. L. A. Demers.  
Chairman, Board of Steamship Inspection, F. McDonnell.  
Superintendent of Dominion Steamers and Life Saving Services, Capt. H. Thompson, R.N.  
Marine Superintendent, Capt. L. G. Dixon.

## Notes on "Civil Aviation"

Chief Registrar of Shipping, J. M. Skuce.  
Superintendent of Agencies, A. de B. Tremaine.  
Chief Naval Architect, Chas. F. M. Duguid. A.M.  
I.N.A.

### Steamship Inspectors

#### Senior Steamship Inspectors :

Halifax, N.S., N. A. Currie.

Toronto, Ont., P. W. Lyon.

Vancouver, B.C., H. G. Robinson.

#### Inspectors of Boilers and Machinery

:

Ottawa, Principal S.S. Inspector, Alfred E. Hopper.

Montreal, Que., John T. Gardham.

Halifax, N.S., D. J. Stevens

#### Steamship Inspectors General :

Halifax, N.S., A. I. Ross

Sorel, Que., F. X. Hamelin.

Montreal, Que., J. E. Lunan.

Montreal, P.Q., F. Bridges.

Montreal, P.Q., J. H. Fontaine

Quebec, Que., J. A. Samson.

St. John, N.B., C. E. Dalton.

Port Arthur, Ont., W. J. Vigars.

Midland, Ont., W. L. Mackenzie.

Toronto, Ont., J. J. Moffat.

Toronto, Ont., A. K. Venables.

Kingston, Ont., Bert Mantrop.

Collingwood, Ont., R. C. Blyth.

Vancouver, B.C., Albert Farrow.

Vancouver, B. C., T. M. Stephen.

Vancouver, B.C., J. T. Mathews.

Victoria, B.C., J. T. Edmond.

#### Inspectors of Hulls and Equipment:

Ottawa, Principal S.S. Inspector, Thos McConkey.

Quebec, Que., J. C. Beaudoin.

St. John, N.B., W. R. Bennett.

Halifax, N.S.

Halifax, N.S., D. K. O'Brien.

Kingston, Ont., M. R. Davis.

Collingwood, Ont.

Toronto, Ont., A. A. Young.

### SECRETARY OF STATE

The Department of the Secretary of State was constituted in 1867 (31 Vic. Chap. 42), to have charge of the State correspondence, and to keep State records and papers not specially referring to other Departments. It also administers the Dominion Companies Act, the Naturalization Acts, and Boards of Trade, Trade Unions and Ticket of Leave Acts.

### SOLDIERS' CIVIL RE-ESTABLISHMENT

This Department was constituted in 1918, (8-9

Geo. V, \_

Chap. 42) to facilitate in every way the re-establishment in civil life of persons in the military

## Notes on "Civil Aviation"

or naval forces of the Dominion in the Great War, and the dependents of such persons. The duties of this Department include the provision of medical treatment, the granting of vocational training, the administration and payment of pensions, etc. Pensions are awarded by the Board of Pension Commissioners, which is entirely separate from and independent of the Department. The Federal Appeal Board, which hears appeals in respect of refusal of pensions or medical treatment is also an independent body.

### NATIONAL RESEARCH COUNCIL

President, H. M. Tory, D.Sc., LL.D.

F. D. Adams, Sc.D., LL.D.; Chas. Camsell, B.Sc., LL.D.; A. L. Clark, B.Sc., Ph.D.; Hume Cronyn, B.A., LL.B.; A. Frigon, B.Sc., D.Sc.; Sir George Garneau, B.A.Sc., LL.D.; J. H. Grisdale, B.Agr., D.Sc.A.; Prof. A. B. Macallum, Ph.D., Sc.D.; A. S. MacKenzie, Ph.D., D.C.L.; J. M. McCarthy, B.Sc.; J. A. McClelland; Prof. J. C. McLennan, O.B.E., Ph.D., LL.D.; W. C. Murray, M.A., LL.D.; Prof. R. F. Ruttan, B.A., M.D.

Secretary, S. P. Eagleson, West Block, Ottawa, Ont.

### DEPARTMENT OF NATIONAL DEFENCE - Canada

During the session of 1922, Parliament passed a bill entitled "The National Defence Act, 1922" creating the Department of National Defence, through the amalgamation of the Departments of Militia and Defence and the Naval Service and the Air Board. It was provided that the Act should come into effect upon a date to be announced by proclamation; and His Excellency the Governor General in Council subsequently issued a proclamation bringing the National Defence Act into effect from January 1, 1923.

Minister of National Defence—Hon. E. M. Macdonald, K.C., LL.B.

Minister's Private Secretary—Major T. W. MacDowell, V.C., D.S.O.

Deputy Minister—G. J. Desbarats, Esq., C.M.G.

Defence Council

President—The Hon. the Minister of National Defence.

Vice President—The Deputy Minister.

Members—The Chief of Staff and the Director of the Naval Service.

Associate Members—The Adjutant General, The Quartermaster-General, and the Director of the Canadian Air Force.

Secretary—A. B. Goldwyer-Lewis, Esq., B.A.

Military and Naval Branches

Chief of Staff—Major Gen. J. H. MacBrien, C.B., C.M.G., D.S.O.

Director of the Naval Service—Commodore W. Hose, C.B.E., A.D.C.

Quartermaster-General—Major Gen. E. C. Ashton, C.M.G., V.D.

Adjutant General—Major Gen. H. A. Panet, C.B., C.M.G., D.S.O.

Director of the Royal Canadian Air Force—Group Captain J. S. Scott, M.C., A.F.C., A.D.C.

Civilian Branches

## Notes on "Civil Aviation"

Asst. Deputy Minister—H. W. Brown, Esq.  
 Secretary of Department—Temp. Lt.-Col. C. L. Panet.  
 Chief Accountant—R. P. Brown, Esq.  
 Director of Contracts—J. A. McCann, Esq.  
 Judge Advocate General—Bt. Major (temp.Col.) R. J. Orde.  
 Chief of the Printing and Stationery Branch, F. J. Boyle, Esq.  
 Chief Registration Clerk—A. E. Watterson, Esq.  
 Branch of the General Staff  
 Chief of Staff (National Defence)—Major-General J. H. MacBrien, C.B., C.M.G., D.S.O., p.s.c.  
 Deputy Chief of the General Staff, and Director of Training and Staff Duties—Colonel A. G. L. McNaughton, temp. Col.-on-the-Staff (Hon. Brig.-Gen.), C.M.G., D.S.O., p.s.c.  
 Director of Military Training—Lieut.-Col. & Bt. Col. T. V. Anderson, D.S.O., R.C.E.  
 Director Military Operations and Intelligence—Bt. Col. (temp. Col.) J. S. Brown, C.M.G. D.S.O., p.s.c. (R.C.R.).  
 Director of Physical Training and Cadet Services—Lieut. Col. (temp. Col.) S. H. Hill, V.D., (m.s.c.) (s.m.h.) (s.s.).  
 Director of Historical Section—Major (temp. Col.) A. F. Duguid, D.S.O., (R.C.A.).  
 Staff Officer, Artillery Duties.—Colonel L. A. G. O. Roy, (R.C.A.).  
 Commandant Canadian Small Arms School—Lieut. Col. W. K. Walker, D.S.O., M.C.  
 Assistant Director Signals—Major (Brev. & temp. Lieut. Col.) E. Forde, D.S.O., (s.s.h.) (R.C.C. of S.).  
 Assistant Director Military Intelligence—Bt. Lt. Col. (Temp. Lieut. Col.) H. H. Matthews, C.M.G., D.S.O., (L.S.H., R.C.).  
 Branch of the Adjutant-General  
 Adjutant-General—Major-General H. A. Panet, C.B., C.M.G., D.S.O.  
 Director General of Medical Services—Bt. Col. H. M. Jacques, D.S.O. (R.C.A.M.C.).  
 Director of Organisation and Personal Services—Lt. Col. (temp. Col.) C. H. Hill, D.S.O., A.D.C. (R.C.R.).  
 Director of Pay Services—Colonel A. O. Lambert, (R.C.A.P.C.).  
 Director of Records—Bt. Lieut.-Col. (temp. Col.) F. L. Armstrong, O.B.E.  
 Deputy Director General of Medical Services—Lt.-Col. Brev. Col., A. E. Snell, C.M.G., D.S.O., (R.C.A.M.C.)  
 Assistant Director of Organization—(Bt. Lt.-Col. (temp. Lt.-Col.) H. J. Coghill, (PPC.L.I.)  
 Assistant Director of Personal Services—Bt. Lt. Col. (temp. Lt.-Col.) D. McNiven, R.C.R.  
 Assistant Director of Pay Services—Major H. T. Goodeve, R.C.A.P.C.  
 Branch of the Quartermaster-General

## Notes on "Civil Aviation"

Quartermaster-General—Major-General E. C. Ashton,  
C.M.G., V.D.

Director of Engineer Services—Colonel A. C. Caldwell,  
(R.C.E.).

Director of Supply and Transport—Lt. Col. (temp.  
Col.) H. C. Greer (R.C.A.S.C.)

Director of Equipment and Ordnance Services—  
Bt. Lieut.-Col. (temp. Col.) M. C. Gillin, (R.-  
C.O.C.).

Officer Administering Canadian Veterinary Services—  
Lieut.-Col. (Bt. Colonel) M. A. Piche, V.D.  
(R.C.A.V.C.)

Assistant Director of Engineer Services—Bt. Col.  
(temp. Lt.-Col) S. H. Osier, C.M.G., D.S.O.,  
R.C.E.

Assistant Director of Supplies and Transport—  
Major E. H. Spearing, R.C.A.S.C., (acting).

### MILITARY SERVICE

1. The Canadian Militia is composed of the  
Active Militia and Reserve.

2. The Active Militia consists of the Canadian  
Permanent Force and the Units of the Active Militia  
of the several branches of the Service which are organized  
and perform annual training.

3. The Reserve Militia consists of Reserve Units  
and of all able bodied citizens between the ages of  
18 and 60 with the following exemptions: Members  
of the King's Privy Council of Canada; Judges of all  
Courts of Justice; Members of the executive Councils  
of Provinces; Deputy Ministers of the Federal and  
Provincial Governments; Clergy and Ministers of all  
denominations; Telegraph clerks in actual employment;  
Officers and clerks regularly employed in the  
collection of revenue; Wardens and officers of all public prisons and lunatic asylums; Members of the  
Naval Militia; Members of the police force and fire  
brigade permanently employed in incorporated  
cities, towns and villages; Professors in colleges  
and universities and teachers in religious orders;  
Persons disabled by bodily or mental infirmity;  
The only son of a widow, being her only support;  
Pilots and apprentice pilots during the season of  
navigation; Persons who, from the doctrines of their  
religion, are averse to bearing arms or rendering personal  
military service, under such conditions as are  
prescribed.

4. The Reserve Formations of the Active Militia,  
as distinguished from the Reserve Militia mentioned  
in paragraph 3, comprise:—

- (a) Reserve units of City & Rural Corps.
- (b) Reserve Depots as may be provided for in  
the establishments laid down for the Canadian  
Militia.
- (c) The Reserve of Officers.

5. The Permanent Force is a small body of all  
Arms. Its duties are mainly to provide training  
depots and schools for the Non-Permanent Active  
Militia and the staffs necessary at Defence Headquarters  
and the Military Districts.

## Notes on "Civil Aviation"

6. The Non-Permanent Active Militia is a force consisting of all branches of the service, its total authorized strength at present being 10,458 officers and 111,461 other ranks.

(b) In addition to the above, authority exists for the formation of further units but their actual organization and recruiting of personnel is not to be proceeded with at present.

(c) Roughly speaking, all branches and active units are organized upon the British Army system.

Terms of Enlistment:

7. (a) Permanent and Non-Permanent Active Militia for a period of 3 years.

(b) Reserve Militia, for such period as is prescribed (namely, to age limit for various ranks).

(c) The Permanent Active Militia is available at all times for general service.

(d) The Governor-General in Council may place the Militia, or any part thereof, on active service anywhere in Canada, and also beyond Canada, for the defence thereof, at any time when it appears advisable so to do by reason of emergency.

MILITARY DISTRICT no 1.

Headquarters, London, Ont.

District Officer Commanding—Col. (temp. Col.

Commdt.) (Hon. Brig.-Gen.) W. B. M. King,

C.M.G., D.S.O., V.D.

General Staff Officer—Lt.-Col, F. Gilman, D.S.O., (R.C.D.), (temp.)

MILITARY DISTRICT no. 2.

Headquarters, Toronto, Ont.

District Officer Commanding—Colonel (temp. Col.-

Comdt.) (Hon. Brig. Gen.) A. H. Bell, C.M.G., D.S.O.

General Staff Officer—Bt. Col. J. L. R. Parsons,

C.M.G., D.S.O., (P.P.C.L.I.)

MILITARY DISTRICT no. 3.

Headquarters, Kingston, Ont.

District Officer Commanding—Major-General J. H.

Elmsley, C.B., C.M.G., D.S.O., p.s.c.

General Staff Officer—Bt. Lieut.-Col. R.J. Brook,

C.B.E., D.S.O., p.s.c., (R.C.R.)

MILITARY DISTRICT no. 4.

Headquarters, Montreal, PQ.

District Officer [Commanding—Colonel (temp. Col.

comdt.) (Hon. Brig.-Gen.) C. J. Armstrong, C.B.,

C.M.G., V.D.

General Staff Officer—Bt. Lt.-Col. K. M. Perry,

D.S.O., p.s.c., (R.C.R.)

MILITARY DISTRICT no. 5.

Headquarters, Quebec, PQ.

District Officer Commanding—Col. (temp. Col. comdt.) (Hon. Brig.-Gen.) J.P. Landry, C.M.G., V.D.

General Staff Officer—Bt. Lt.-Col. J. M. Prower,

D.S.O. p.s.c.

MILITARY DISTRICT no. 6.

Headquarters, Halifax, N.S.

## Notes on "Civil Aviation"

District Officer Commanding—Major-General H. C.

Thacker, C.B., C.M.G., D.S.O.

General Staff Officer—Bt. Lt. Col. (temp. Lieut.-

Col.) H. E. Boak, D.S.O., p.s.c., R.C.A.

MILITARY DISTRICT no. 7.

Headquarters, St. John, N.B.

District Officer Commanding—Colonel (temp. Col.

comdt.) W. B. Anderson, C.M.G., D.S.O., p.s.c.

MILITARY DISTRICT no. 10

Headquarters, Winnipeg, Man.

District Officer Commanding—Major-General H. D.

B. Ketchen, C.B., C.M.G.

General Staff Officer—Bt. Lieut.-Col. G. R. Pearkes,

V.C., D.S.O., M.C., A.D.C., p.s.c., (PPC.L.I.).

MILITARY DISTRICT no. 11.

Headquarters, Victoria, B.C.

District Officer Commanding—Colonel (temp. Col.

comdt.) (Hon. Brig.-Gen.) J. M. Ross, C.M.G.,

D.S.O., V.D.

General Staff Officer—Bt. Major L. C. Goodeve,

D.S.O., p.s.c., (R.C.A.)

.

MILITARY DISTRICT no. 12.

Headquarters, Regina, Sask.

District Officer Commanding—Col. (temp. Col.

comdt.) (Hon. Brig.-Gen.) D. M. Ormond, C.M.G.

,

D.S.O., A.D.C.

General Staff Officer—Lt.-Col., D. J. MacDonald,

D.S.O., M.C., (L.S.H., R.C.), temp.

MILITARY DISTRICT no. 13

Headquarters, Calgary, Alta.

District Officer Commanding—Col. (temp. Col.

comdt.) W. W. P. Gibsone, C.M.G., D.S.O., O.B.E.

General Staff Officer—Capt. & Bt. Major H. T.

Cock, M.C., p.s.c., R.C.R.

### DEPARTMENT OF NATIONAL DEFENCE - ROYAL CANADIAN AIR FORCE BRANCH

#### THE AIR SERVICE

Under the Act creating the Department of National Defence, the powers, duties and functions, vested in the Air Board by the Air Board Act, Statutes of 1919, are administered under the direction of the Minister of National Defence.

The Air Services have been incorporated in the Department of National Defence since the passing of that Act in 1922.

The Air Service has three functions:

- (1) the air defence of the country.
- (2) the conduct of flying operations for the civil services of the Government.
- (3) the control of civil aviation.

All three functions are administered by the Director of the Royal Canadian Air Force,

Director of the Royal Canadian Air Force, Group Captain J. S. Scott, [M.C., A.F.C., A.D.C., is responsible to the Chief of Staff for the execution of these duties.

The Royal "Canadian Air Force" consists of an administrative Headquarters at Ottawa, and 6 Units as follows:

1. Vancouver, B.C.—Officer Commanding—Squadron Leader J. H. Tudhope, M.C.
2. High River, Alta.—Officer Commanding—Squadron Leader A. L. Cuffe.
3. Winnipeg, Man.—Officer Commanding—Squadron Leader G. O. Johnson, M.C.
4. Camp Borden, Ont.—Officer Commanding—Wing Commander L. S. Breadner, D.S.C.
5. Ottawa, Ont.—Officer Commanding—Squadron Leader A. B. Shearer.
6. Dartmouth, N. S.—Officer Commanding—Flying Officer T. A. Lawrence.



## Notes on "Civil Aviation"

The Headquarters organization is divided into three branches:

1. Assistant Director, Operations, Training, Staff Duties: Wing Commander J. L. Gordon, D.F.C
2. Assistant Director, Technical and Equipment: Wing Commander E. W. Stedman, O.B.E.
3. Assistant Director and Secretary: Mr. J. A. Wilson, Civil Aviation and other civil duties.

Camp Borden, Ont. is the main training station;

technical depot, including workshops and central stores, is at Ottawa.

The units at Vancouver, High River, Winnipeg, Ottawa and Dartmouth, in addition to Air Force duties, have undertaken large programmes of civil operations, principally for the forestry and survey services of the Dominion Government.

The total personnel employed in 1925-26 number 84 officers, 360 men, and 16 civilians.

The control of civil aviation is under the direction of an officer of the Permanent Air Force, who is appointed as "Acting Controller of Civil Aviation".

The "Acting Controller of Civil Aviation" is responsible for:

1. the technical work involved in the inspection, registration and licensing of aircraft and
2. the technical work involved in the inspection, registration and licensing of air harbours; and
3. *the examination and licensing* of commercial pilots and
4. *the examination and licensing* of air engineers; also,
5. "other duties" as called for in the Air Regulations.

On September 30th, 1925, there were in force, certificates and licenses as follows:

- A. Private Air Pilot's Certificates 7
- B. Commercial Air Pilot's Certificates 29
- C. Air Engineer's Certificates 86
- D. Registration of Aircraft Certificates 36
- E. Air harbour Licenses 24

As there has been little development of aviation as a means for the transportation of mails, supplies or passengers, the work of operating companies has largely been in connection with forest patrol and survey work for the Provincial Governments, lumber and pulp companies. Aerial photography is also beginning to play an important part in such work.

## APPENDIX - US COUNCIL IN CANADA 1924-1926

### FOREIGN CONSULS IN CANADA

#### United States.

—

Annapolis, N.S., J.M. Owen, C. Ag't.;  
Bathurst, N.B., C. M. Mersereau, C. Agt.; Beebe Jet.,  
Que., H. S. Beebe, C. Agt.', Bridgewater, N.S., A. C.  
Barnaby, C. Agt.

;

Calgary, Alta., Samuel G. Reat, C.,  
H.L. Fitts, V.C. ; Campbellton, N.B., G. C. Woodward,  
C. ; Charlottetown, P.E.I., E. N. Gunsaulus, Jr.,  
V.C., W. C. Stewart, V.C.; Cumberland, B.C., G. W.  
Clinton, C. Agt.; Edmonton, Alta., H. Cox, C. Agt.;  
Ferne, B.C., N. F. Brand, C., G. S. Appleyard, V.  
C

.

\Fort William, Ont., M. W. Vance, C., H. I. De-  
Lamater, V.C.; Fredericton, N.B., F. C. Johnson,  
V. C. ; Gaspé, Que., K. J. Carter, C. Agt.; Halifax,  
N.S., W. H. Robertson, C.G., B. Gotlieb, C.,  
W. H. Brown, V.C., Hamilton, Ont., R. F.  
Boyce, C., D. Donaldson, V.C., Kenora, Ont.,  
R. H. Moore, C. Agt.; Kingston, Ont., F. S. S.  
Johnston, C., A. P. Lothrop, V.C.; Lethbridge, Alta.,  
R. A. Thrall, C. Agt.; Liverpool, N.S., J. M. Mack,  
C. Agt.; London, Ont., G. Russell Taggart, C.,  
C. E. B. Payne, V.C. ; Louisburg, N.S., A. A. Martell,

## Notes on "Civil Aviation"

C.Agt.; Lunenburg, N.S., C. W. Lane, C.Agt.; Moncton, N.B., B. M. Rasmusen, C.; E. A. Cummings, V.C.

;

Montreal, Que., A. Halstead, C.G., W. I. Jackson, C., H. M. Cochran, C., J. R. Barry, V.C., L. H. Johnson, V.C., S. J. Wardell, V.C., A. B. Giroux, V.C., G. B. Andrews, V.C., J. W. Clark, V.C.; J. G. Finley, V.C., J. F. Deming, V.C.; Nanaimo, B.C., A. C. Van Houten, C.Agt.; Newcastle, Ont., J. A. Creaghen, C. Agt.; Niagara Falls, Ont., M. W. Brunswick, C., F. M. Sack, V.C.; North Bay, Ont., G. E. Seltzer, V.C. Ocean Falls, B. C., H. E. Burdon, C. Agt.; Ottawa, Ont.

,

J. G. Foster, C.G., J. D. Hickerson, C., H. M. Sanford, V.C., E. M. Hoyt, V.C., H. F. Allman, V. C., Port Arthur, Ont., M. M. Vance, C., H. I. De Lamater, V. C.; Port Hawkesbury, N.S., J. J. Bourinot, C. Ag't.; Prescott, Ont., W. P. Garrety, C., Patrick J. McAndrews, V.C.; Prince Rupert, B.C., E. A. Wakefield, C.; Quebec, Que., E. H. Dennison, C., E. W. LaRichelifere, V.C.; Riviere duLoup, Que., W. M. P. Mitchell, V.C., K. Alexander, V.C.; Regina, Sask., P. H. Cram, C., E. E. Herbert, V.C.; Sarnia, Ont., F. C. Slater, C., Sault Ste Marie, Ont., W. E. Chapman, C., E. J. Collis, V.C., H. W. Carlson, V.C. Sherbrooke, Que., E. Sauer, C., E. L. Munroe, V.C.; Summerside, P.E.I., N. Sinclair, C. Agt.: Sydney, N.S., H. H. Dick, C.; St. John, N.B., R. Wormuih, C., E. H. Carter, V.C.; St. Leonards, N.B., A. P. Labbie, C. Agt.; St. Stephen, N.B., T. W. Chilton, C., F. N. Mitchell, V.C.; Toronto, Ont., H. M. Shantz, C., F. A. Bohne, V.C., G. Teale, V.C., C. P. Fletcher, V.C.; Vancouver, B.C., E. L. Harris, C.G.

,

H. S. Tewell, C., L. R. Blohm, C., J. C. Hawkins, V.C., S. A. Belovsky, V. C., A. C. Martin, V.C.; Victoria, B.C., G. A. Bucklin, C., R. M. Newcomb, V. C.; White Horse, Yukon, D. A. Muirhead, C.Agt.; Windsor, Ont., H. F. Hawley, C., A. D. Wells, V.C., Winnipeg, Man., P. S. Heintzleman, C.G., J. G. Erhardt, C., R. N. Davis, V.C.; L. H. Johnson, V.C.; Yarmouth, N.S., G. R. Willson, C.

### APPENDIX - THE AIR NAVIGATION DIRECTIONS (A.N.D.)

<b>AIR NAVIGATION DIRECTIONS (A.N.D.) 1, 1920</b>
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<b>AIR NAVIGATION DIRECTIONS (A.N.D.) 2, 1921</b>
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<b>AIR NAVIGATION DIRECTIONS (A.N.D.) 3, 1922</b>
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## Notes on "Civil Aviation"

**AIR NAVIGATION DIRECTIONS (A.N.D.) 4, 1923**

**AIR NAVIGATION DIRECTIONS (A.N.D.) 5, 1924**

**AIR NAVIGATION DIRECTIONS (A.N.D.) 6, 1925**

**AIR NAVIGATION DIRECTIONS (A.N.D.) 7, 1926**

**AIR NAVIGATION DIRECTIONS (A.N.D.) 8, 1927**

**AIR NAVIGATION DIRECTIONS (A.N.D.) 9, 1928**

**AIR NAVIGATION DIRECTIONS (A.N.D.) 10, 1929**

**AIR NAVIGATION DIRECTIONS (A.N.D.) 11, 1930**

**AIR NAVIGATION DIRECTIONS (A.N.D.) 11B, 1931**

**AIR NAVIGATION DIRECTIONS (A.N.D.) 11C, 1932**

1932 : Source - FLight 20 OCTOBER 1932 No. 1243. (Vol. XXIV. No. 43.)

THE Secretary of State may issue such directions as he thinks fit for the purpose of supplementing or giving full effect to the provisions of this Order, including the Schedules thereto."

this sentence, which is Article 30 of the Air Navigation (Consolidation) Order of 1923, invests whoever happens to be Secretary of State for Air at any particular moment with pretty well unlimited power. "

Such directions as he sees fit " is sufficiently comprehensive to cover almost anything. As the Order became law some nine years ago, the aviation community should probably deem itself fortunate that no Secretary of State for Air has " seen fit " to stop all flying at some time during that period. Now, however, the Secretary has " seen fit " to put a ban on all experimental flying, and it has remained for Lord Londonderry, our present Secretary of State for Air, to put the crowning indignity on a long series of hampering restrictions. We do not for one moment believe that Lord Londonderry has been personally involved in drafting the offending clause in A.N.D. 11, but as Secretary of State for Air he cannot escape the responsibility for having affixed his signature to this amazing document,

The Air Navigation Directions, 1932 (A.N.D. 11), is an innocent-looking publication, price 9d., obtainable by anyone from His Majesty's Stationery Office, and outwardly shows no signs of the momentous

## Notes on "Civil Aviation"

ch.uses which, within its plain white covers, are so insidiously foisted upon an unsuspecting aviation community. The rules and regulations which surround anyone who is unfortunate enough to desire to get into the air are so numerous that we sometimes wonder that any ever bother to fly at all. Among the reams of red-tape notices of one kind and another, a small item like that of experimental flying may easily escape attention for a time, but, as in other spheres of endeavour, ignorance of the law is no excuse, and those who may have failed to see the new regulation would be soon shot down by the Air Ministry's "Very Pistol."

new clause which has been included in A.N.D. 11 states that no one may attempt to get off the ground without having first obtained the consent of the Secretary of State for Air.

p.24 of A.N.D. 11 under Section VI and Article 60, that with reference to proviso (a) to Article 3 (1) and proviso (E>) to Article 4 (1) of the Order (we nearly wrote the "Sacred Order") an aircraft which does not comply with all or any of the conditions there mentioned may, nevertheless, fly, provided that the flight does not contravene any of the other provisions of the Order, or that its flight is carried out by special permission of the Secretary of State for Air, or, finally, that the flight satisfies "A conditions" or "B conditions," which are then duly set forth in Section VI of A.N.D. 11. Upon looking up proviso (a) to Article 3 (1) and proviso (b) to Article 4 (1) of the Order, it is found that these refer to an exemption from having to comply with certain regulations if written dispensation has been obtained from the Secretary of State for Air before making the flight.

"A conditions" and "B conditions" of Section VI, Article 60, of A.N.D. 11. The "A conditions" lay it down that the flight may only be made if the aircraft has a certificate of airworthiness, is a "subsequent aircraft," that the flight is for the purpose of getting a certificate of airworthiness, or that application for a C. of A. has previously been made. Obviously, "A conditions" do not help us much either. Our last hope is now centred in "B conditions." Alas, "B conditions" are just as bad. In fact, they are on a par with the deep depression conditions in which Iceland seems to spend most of its unhappy time. In the main, "B conditions" relate to flights carried out under the supervision of "approved" firms, and with aircraft built by "approved" firms.

So there you are. If you are not an "approved" firm, you may not take anything into the air without written permission from the Secretary of State for Air. Bureaucracy can go no farther than that. The Secretary of State for Air has "seen fit" to put the official "kibosh" on all private enterprise. What business has a "disapproved" firm or person to want to take things into that air which is, apparently, the sacred property of the Air Council? What right have such as they to cause air eddies not approved by the N.P.L., with wings and fuselages unknown to Farnborough? If such things were to be permitted, who knows but that some day some totally unknown person, strongly "disapproved" by officialdom, might not be lucky enough to invent and try out some new form of flying machine, or introduce some new principle of flying.

The whole situation is preposterous, and would be comic if it were not fraught with serious consequences. What Divine right gives the Air Ministry powers to prevent any private individual or firm from taking experimental aircraft or engines into the air? The British aviation community has submitted tamely to one red-tape restriction after another being introduced, until by now no man, unless he be "approved" by the Air Ministry, has a soul he dares to call his own—aeronautically speaking. And even the "approved" firms are barely tolerated. They are regarded by officialdom as very inferior beings to the Air Ministry's "experts," but, of course, they have to be put up with because one could not do without them altogether, unless—blessed inspiration—the Air Ministry were to kill off all private aircraft and engine firms and revert to that happy state of affairs which obtained when Farnborough was the Royal Aircraft Factory and its machines were designed by "the best brains in the country."

By the new regulations, no private experimenter may make a "hop" across his own meadow unless he has got permission from the Air Ministry (in writing). The old limitation—that flights must not be made outside the three-mile limit of an aerodrome—was bad enough, but at least there was

traceable in it a sane desire to protect the public on terra firma from possible damage. The new regulation seems to be entirely without justification, unless it is the intention of the Air Council to squash all those who are just now keenly interested in the development of low-powered aeroplanes. We hope that we are not going to be the means of getting Senor de la Cierva into trouble, but as he is not an " approved " firm, he could, under this regulation, be stopped from testing the new machine which he is now flying at Hamble. That machine is never to be marketed. Consequently no application has been made for a certificate of airworthiness. But on it Senor de la Cierva has carried out invaluable research work which will unquestionably result in the production of better and still better " Autogiros." Must he, therefore, obtain the Air Minister's written permission every time he wants to make a short flight? One could probably think of several others quite as capable as Senor de la Cierva of deciding what is or is not a reasonably " safe " aircraft without asking the Air Ministry. Even an " approved " aircraft firm is likely to suffer through this ridiculous restriction. Let it be supposed, for example, that an aircraft has been built by X & Co., who are " approved," and that it is a " subsequent " aircraft. Y & Co. may be agents, and may have their aerodrome more than 6 miles from that of X. They may wish to stock a few of X's machines so as to have them ready to sell " over the counter," as it were. The C. of A. will not be wanted until the aircraft is sold, and consequently no application is made for it at once. But X cannot have it flown across to Y's aerodrome because the flight is not a test flight, nor is the aircraft being flown for its C. of A. So every time X & Co. want to fly a machine across to Y's aerodrome to replenish his stock, a special written permission must be obtained. This does not sound very formidable, but getting a decision from the Air Ministry on any subject is apt to be a lengthy business at any time.

This whole subject is one which has influences far outside the sphere of the S.B.A.C., and it will be interesting to see if bureaucracy is to be allowed to " get away with it."

<b>THE AIR NAVIGATION DIRECTIONS (A.N.D.) 11C</b>
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Ground Engineer's "X" License : "The constructor shall ensure by suitable inspection that all engines, instruments, and parts (including wiring for electrical equipment other than wireless apparatus) that are fitted into the aircraft are to be installed as to function correctly, and, if wireless telegraphy or wireless telephony apparatus is fitted, that the installation of such apparatus, including bonding and screening, is not such as to prejudice the operation of the aircraft . . . the individuals responsible for such inspection shall be indicated by signatures on the inspection record.

There are a number of official publications dealing with various individual aspects of our subject, and in compiling this section free use has been made of the information contained in these, the principal of which are

Air Publication 1208: Airworthiness Handbook of Civil Aircraft.  
Inspection Instructions of the Aeronautical Inspection Directorate, Air Ministry.

## Notes on "Civil Aviation"

Admiralty Handbook on Wireless Telegraphy.

Ground Engineers must realize that, apart from routine tests of the continuity of wiring and insulation resistance of an installation in an aircraft, their duties also include a visual examination of all the various components, instruments, and wiring comprising the various circuits, for correctness to specification requirements, drawing requirements, and standard of workmanship.

Installation work, or work in connection with the modification of an installation, and the inspection and testing thereof, must be carried out by, or under the direct supervision of, a duly qualified ground engineer, or contractor officially approved for such work.

5. The necessary log book entries are made and certified, and any necessary action taken to obtain an official amendment of the aircraft's current Certificate of Airworthiness.

A word of warning in connection with installations in aircraft, or the incorporation of modifications : such action might invalidate the aircraft's Certificate of Airworthiness

In Air Publication 1208, Airworthiness Handbook of Civil Aircraft is published a list of officially approved items of equipment, but the appearance of the name of any specific item of equipment in such a list does not absolve a ground engineer from the necessity for obtaining adequate documentary evidence, by way of an approved release note or equivalent means, of the correct manufacture, inspection and test of the item in question in accordance with the specification and/or drawings quoted in Air Publication 1208.

## Appendix : Documents Listed / referenced

United Kingdom Air Ministry Directorate of Technical Development (D.T.D) - Specifications issued by,  
United Kingdom Air Ministry Air Publication (A.P or Air Pub)  
United Kingdom Air Ministry Reports and Memoranda (R&M) issued by the Aeronautical Research Committee  
British Standards Institute : B.S Specifications / B.S Spec

Aviation And Aeronautical Engineering (Aviation Weekly - Aviation Week and Space Technology)  
15 November 1919 - Vol VII No. 8 Price 25 cents

Air Publication 1477 - Notes on Metal Aircraft Rigging, 1933  
Air Publication 1464 - Engineering Manual for the Royal Air Force.  
Air Publication - A Manual of Rigging for Aircraft  
Air Publication 928 - Royal Air Force Flying Training : Part II Applied Flying, 1922  
Air Publication 1081 - Royal Air Force Pocket Book

## Appendix : Air Board Staff- Air Foremen / Mechanic lists

### APPENDIX B1: AIR FOREMEN / MECHANICS EMPLOYED DURING 1919

<b>1918 - 1919 : SOURCE REF: REPORT OF THE AUDITOR GENERAL OF CANADA, 1918 - 1919</b>
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### APPENDIX B2 : AIR FOREMEN / MECHANICS EMPLOYED DURING 1920

<b>1919 - 1920: SOURCE REF: REPORT OF THE AUDITOR GENERAL OF CANADA, 1919 - 1920</b>
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**APPENDIX B3 : AIR FOREMEN / MECHANICS EMPLOYED DURING 1921****1921 - 1922: SOURCE REF: REPORT OF THE AUDITOR GENERAL OF CANADA, 1920-1921**

Commission de l'Air: Appointements: Ottawa et en général  
 Station Superintendent's Staff,  
 J.E.C. Hammond- air equipment officer, Ottawa  
 E.W Stedman - technical officer, Ottawa

Canadian Air Board Staff 1920 1921 — Air Foremen, Mechanics list - Halifax, Nova Scotia			
Name	Position	A.E License No	War Duty
W.G Chapman	Air Foreman Mechanic		
W. Gorham	Air Foreman Mechanic		
M. Graham	Air Foreman Mechanic		
S. McCauley	Air Foreman Mechanic		
C.W Wood	Air Foreman Mechanic		
R.W Beck	Fitter - Aircraft Engines		
E. Billington	Fitter - Aircraft Engines		
H.G. Carpenter	Fitter - Aircraft Engines		
L.E. Colp	Fitter - Aircraft Engines		
FR. Corp	Fitter - Aircraft Engines		
E.S. Dixon	Fitter - Aircraft Engines		
A.E. Dowell	Fitter - Aircraft Engines		
A.G. Morrall	Fitter - Aircraft Engines		
H.H. McClatchey	Fitter - Aircraft Engines		
W.A. Patrick	Fitter - Aircraft Engines		
F. Shaw	Fitter - Aircraft Engines		
A.E. Wright	Fitter - Aircraft Engines		
Jos. E. Hertel	Flying Boat Builder		
D. Ceiffetts	Rigger - Aircraft		
M.L Colp	Rigger - Aircraft		
L.R Failes	Rigger - Aircraft		

# Notes on "Civil Aviation"

Canadian Air Board Staff 1920 1921 — Air Foremen, Mechanics list - Halifax, Nova Scotia			
Name	Position	A.E License No	War Duty
T. Hayes	Rigger - Aircraft		
T.A. Lawrence	Rigger - Aircraft at \$1,620 & <i>air pilot / navigator</i> at \$2,460		
J.H. Palmer	Rigger - Aircraft		
J.H. Preston	Rigger - Aircraft		
Jas. Simpson	Rigger - Aircraft		
H. Tremblay	Rigger - Aircraft		

Canadian Air Board Staff 1920 1921 — Air Foremen, Mechanics list - Jericho Beach, Vancouver British Columbia			
Name	Position	A.E License No	War Duty
R.W. Coupland	Air Foreman Mechanic		
W. Godson	Air Foreman Mechanic		
A.L. Hartridge	Fitter - Aircraft Engines		
R. Pearce	Fitter - Aircraft Engines		
C. Plant	Fitter - Aircraft Engines		
R. Slimmon	Fitter - Aircraft Engines		
S. Watson	Fitter - Aircraft Engines		
H.O. Bell	Rigger - Aircraft		
W.A. Clark	Rigger - Aircraft		
R.E. Greig	Rigger - Aircraft		
T.E. Hill	Rigger - Aircraft		
Geo. Sinclair	Rigger - Aircraft		

Canadian Air Board Staff 1920 1921 — Air Foremen, Mechanics list - Camp Borden, Ontario			
Name	Position Employed	A.E License No	War Duty
A. Brown	Air Foreman Mechanic		
R.G. Ford	Air Foreman Mechanic		
S. McConnell	Air Foreman Mechanic		



# Notes on "Civil Aviation"

Canadian Air Board Staff 1920 1921 — Air Foremen, Mechanics list - Camp Borden, Ontario			
Name	Position Employed	A.E License No	War Duty
D. Tough	Air Foreman Mechanic		
E. Delcorde	Fitter - Aircraft		
D. Black	Fitter - Aircraft Engines		
J. Boyd	Fitter - Aircraft Engines		
F. Bradley	Fitter - Aircraft Engines		
H.S. Brockington	Fitter - Aircraft Engines		
G.E. Chilton	Fitter - Aircraft Engines		
T. H. Creears	Fitter - Aircraft Engines		
H. Curtis	Fitter - Aircraft Engines		
J.E. Davies	Fitter - Aircraft Engines		
A.E. Hutt	Fitter - Aircraft Engines		
P.G. Lyons	Fitter - Aircraft Engines		
R.L. Martinson	Fitter - Aircraft Engines		
A. May	Fitter - Aircraft Engines		
M.J. O'Connell	Fitter - Aircraft Engines		
C.E. Royston	Fitter - Aircraft Engines		
H.L. Savinon	Fitter - Aircraft Engines		
V. Seller	Fitter - Aircraft Engines		
M.W. Shiles	Fitter - Aircraft Engines		
F. Watson	Fitter - Aircraft Engines		
Charles Webb	Fitter - Aircraft Engines		
Alfred Day	Fitter - Engines		
H.C. Foster	Fitter - Engines		
W.L. Groundwater	Fitter - Engines		
C.M. Guise	Fitter - Engines		
C.W. Heath,	Fitter - Engines		
G.R. Hutt	Fitter - Engines		

# Notes on "Civil Aviation"

Canadian Air Board Staff 1920 1921 — Air Foremen, Mechanics list - Camp Borden, Ontario			
Name	Position Employed	A.E License No	War Duty
J. Tyrell	Fitter - Aircraft Engines		
J.E. Brewster	Rigger - Aircraft		
H. Browning	Rigger - Aircraft		
J.E. Chatterton	Rigger - Aircraft		
T.S. Clark	Rigger - Aircraft		
G. Coppin	Rigger - Aircraft		
P. Dow	Rigger - Aircraft		
J. Finnegan	Rigger - Aircraft		
H.W. Fitzgerald	Rigger - Aircraft		
F.C. Gray	Rigger - Aircraft		
E.H. Hoiloman	Rigger - Aircraft		
J.L.H. Hopkins	Rigger - Aircraft		
F. James	Rigger - Aircraft		
R.C. Kidner	Rigger - Aircraft		
A. Kincaid	Rigger - Aircraft		
A.T. Livingstone	Rigger - Aircraft		
Alex B. Macfie	Rigger - Aircraft		
T. Maddicott	Rigger - Aircraft		
A.S.J Maylam	Rigger - Aircraft		
J.E. Murray	Rigger - Aircraft		
T.P. O'Sullivan	Rigger - Aircraft		
D.P. Roberts	Rigger - Aircraft		
W. Rowson	Rigger - Aircraft		
F. Ryan	Rigger - Aircraft		
H. Shone	Rigger - Aircraft		
W. Staveley	Rigger - Aircraft		
W.L. Stone	Rigger - Aircraft		

## Notes on "Civil Aviation"

Canadian Air Board Staff 1920 1921 — Air Foremen, Mechanics list - Camp Borden, Ontario			
Name	Position Employed	A.E License No	War Duty
L. Taylor	Rigger - Aircraft		
A. Williams	Rigger - Aircraft		

Canadian Air Board Staff 1920 1921 — Air Foremen, Mechanics list - Lake St. John, Ontario			
Name	Position Employed	A.E License No	War Duty
J.D Barnes	air engine fitter		
A.L Marceau	air rigger,		
A.D Rose	air rigger,		
L. Sandles	air engine fitter		
A. Ward	air engine fitter		

Canadian Air Board Staff 1920 1921 — Air Foremen, Mechanics list - Morley, Alberta			
Name	Position Employed	A.E License No	War Duty
B.R Cable	air engine fitter		
R.H Fraser	air engine fitter		
S.F Govett	Air Foreman Mechanic		
H. Ives	air rigger,		
A. Rabnett	air rigger,		
J. Rennie	air rigger,		
W.G Thompson	air engine fitter		

Canadian Air Board Staff 1920 1921 — Air Foremen, Mechanics list - High River, Alberta			
Name	Position Employed	A.E License No	War Duty
T.G McClelland	air engine fitter		
J. McGrandle	air engine fitter		

## Notes on "Civil Aviation"

Canadian Air Board Staff 1920 1921 — Air Foremen, Mechanics list - Rockliffe, Ontario			
Name	Position Employed	A.E License No	War Duty
O. Radford	air rigger		

Canadian Air Board Staff 1920 1921 — Technical Staff Wages			
Position	Low	High	Notes :
air engine fitter	\$1080.00	\$1620.00	Must pass the Canadian Civil Service Oral / Practical / Theoretical examination(s) related to the duties undertaken
air rigger	\$1320.00	\$1620.00	Must pass the Canadian Civil Service Oral / Practical / Theoretical examination(s) related to the duties undertaken
air foreman mechanic	\$1800.00	\$2040.00	<ol style="list-style-type: none"> <li>1. Must pass the Canadian Civil Service Oral / Practical / Theoretical examination(s) related to the duties undertaken</li> <li>2. Must hold an Air Engineer's License</li> <li>3. Must be able to accomplish the job of the Fitter</li> <li>4. Must be able to accomplish the job of the Rigger</li> <li>5. Must be able to accomplish the job of the Fabric Worker</li> <li>6. Must be able to accomplish the job of the Flying Boat Builder</li> </ol>
Flying Boat Builder			Must pass the Canadian Civil Service Oral / Practical / Theoretical examination(s) related to the duties undertaken
Aircraft Fabric Worker			Must pass the Canadian Civil Service Oral / Practical / Theoretical examination(s) related to the duties undertaken

Expenditure in England :

Air Ministry, London:

sundry airship parts, \$2,962.25;

rail charges, \$1,245.21;

publications, \$680.18

Impérial Munitions Board, Ottawa:

1 Sopwith snipe aeroplane, \$1,000,

1 Bristol fighter, \$1,500,

spares, \$500

from the United States Navy Dept. :

12 H.S. 2 L flying boats, without engines at \$1,000 ;

spare parts, \$14.47

from Walsh Bros.: lettering and numbering aéroplanes, 83 hr. at \$1.50/ hr

Air Board: Revenue

Fées :

Air harbour licenses, \$350

pilots' certificates, \$78 ;

air worthiness, \$720.

1923

1924

## Appendix C : “International Air Traffic Association” [ATA] members : 1919

1. Denmark : Det Danske Luftfartselskab
2. Germany : Deutsche Luft-Reederei,
3. Great Britain : Air Transport & Travel
4. Netherlands : Koninklijke Luchtvaart Maatschappij (KLM)
5. Norway : Det Norske Luftfartsrederi
6. Sweden : Svenska Luft Trafik A.B.

The 6 members from 6 nations formed an association with the objective to establish policies and procedures that would govern the member airline’s technical, logistical and operational processes.

America : Pan Am became the first non-European member when it joined in 1939.

## Appendix D : International Air Transport Association, 1944/5 members

57 members of Forty-one airlines (mostly Europe and North America) from 31 countries

1. Cubana Airlines
2. Trans-Canada Airlines
3. Pan-American Airways
4. Lufthansa
5. KLM

## Appendix E : Persons referenced

### Col. K.W. Maurice-Jones, R.E

1. Lt. British Army - Royal Artillery 1914-1919, wounded twice [Mentioned in despatches via London Gazette on 14 Dec 1917 , 21 May 1918]
2. Capt. British Army, 1934. D.S.O - 10/5/29
3. Col. British Army
4. Author "The Shop Story" - Story of the Workshop history of the R.E

### Brigadier-General Sir Frederick Guggisberg, R.E

born at Galt, Ontario 20 July 1869; d at Bexhill, Eng 21 Apr 1930).  
Brigadier-General  
Commissioned in the Royal Engineers in 1889,  
served first in Singapore,  
then at the Royal Arsenal, Woolwich,  
RE surveyor in West Africa 1902-14.  
Governor of the Gold Coast (Ghana) 1919-27.  
Source [thecanadianencyclopedia.ca/en/article/sir-frederick-gordon-guggisberg](http://thecanadianencyclopedia.ca/en/article/sir-frederick-gordon-guggisberg)

### Colonel Frank Searle, British Army, C.B.E., D.S.O.,

Died 4th April 1948

1. Associated with the motor industry during most of his professional career.
2. educated at the Haberdashers' Aske's School, London,
3. educated at the Schmidt College in Germany.
4. 1890 to 1896 - Served an apprenticeship with the London, Brighton and South Coast Railway
5. 1896 - Erector with the London, Brighton and South Coast Railway, for a brief period gaining further experience as a fitter.
6. In charge of a depot for the South Eastern Railway.
7. Locomotive superintendent, Gold Coast Government Railways as.
8. 1903 - Returned to England and went into business as a consulting automobile engineer.
9. 1906 appointed chief engineer to the London General Omnibus Co,
10. elected a Member of the Institution [I.Mech.E? or R.Ae.S ?] in 1910.
11. 1911 - joined the Daimler Motor Company, engaged on the design of heavy vehicles.
12. 1914-18 - attached to the Ministry of Munitions ??
13. 1914-18 appointed head of the British War Mission to the United States in connection with the purchase of machine tools and other engineering products, the value of which ultimately amounted to 02,000,000. ??
14. 1916 - joined the Tank Corps and became head of the technical side.
15. 1919 - Demobilised from the Army with the rank of colonel
16. 1919 - Appointed managing director of the "Daimler Car Hire" service
17. 1924 - Appointed managing director for the air services' department of Imperial Airways.
18. 1928 - 1931 - Managing director of the Rover Motor Car Company, Ltd., of Coventry
19. 1941 - 1946 - deputy chairman and managing director of British Power Boat Co., Ltd., Hythe, Hants, and Poole, Dorset.

### Captain Eustace Broke Loraine, Grenadier Guards, RFC <sup>402</sup>

1. Born September, 1879, Died 05 July, 1912 - Killed in aircraft accident - Stonehenge
2. Elder son of Rear- Admiral Sir Lambton Loraine, Baronet., and Lady Loraine [daughter of Captain Charles Acton Broke, R.E, son of Sir Philip Broke, captain of the Shannon [captured the U.S. frigate Chesapeake June 1st, 1813]
3. 05 July 1899 - Gazetted second lieutenant in the Grenadier Guards upon joining the Army
4. May, 1900 - Promoted lieutenant
5. April, 1900, to May, 1902 served in South Africa, receiving the Queen's medal with three clasps and the King's medal with two clasps.
6. July, 1905, to September, 1906 - adjutant, Grenadier Guards, and was
7. July, 1907 Promoted captain Grenadier Guards

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<sup>402</sup> Source : CG Grey : The Aeroplane. July 11th, 1912.

## Notes on "Civil Aviation"

8. October, 1908 - seconded for duty with the West African Frontier Force.
  9. 07 November 1911 - granted pilot's certificate (No. 154)
  10. June 1912 - appointed to the Military Wing of the Royal Flying Corps
- Succeeded as heir to the baronetcy by his brother, Percy Lyham Lorraine, a Secretary in the Diplomatic Service.  
"Not a reckless flier, but certainly daring, he was generally recognised as one of the finest fliers in the Army,  
He will be greatly missed by many friends"

### John Edward Bernard Seely, 1st Baron Mottistone CB, CMG, DSO, PC, TD

1. (31 May 1868 7 November 1947) was a British soldier and politician.
2. Conservative Member of Parliament (MP) from 1900 to 1904 and a
3. Liberal Member of Parliament (MP) from 1904 to 1922 and from 1923 to 1924.
4. Secretary of State for War for the two years prior to World War I.
5. Served as Under-Secretary of State for the Colonies under Herbert Henry Asquith between 1908 and 1911,
6. Served as Under-Secretary of State for War from 1911 to 1912,
7. Member of the Privy Council in 1909.
8. With Sir John French he was responsible for the invitation to General Foch to attend the Army Manoeuvres of 1912 and was active in preparing the army for war with Germany.
9. The mobility of the proposed Expeditionary Force, and in particular the development of a Flying Corps (the origin of modern day Air Force) were his special interests. According to "The Times" (London), "these developments played a significant role in the victory during World War I".
10. The "Curragh incident" in Ireland in 1914 forced him to resign,
11. 1914 he left England to fight in the First World War, becoming a Major General and commander of the Canadian Cavalry Brigade.
12. Seely won several medals and merited mention in dispatches five times, enhancing his reputation for bravery in battle.
13. Gassed and returned to England, 1918
14. The only member of the Cabinet, besides Churchill, to see active service in the war.
15. Appointed Parliamentary Secretary to the Ministry of Munitions, 1918
16. Appointed Deputy Minister of Munitions, 1918,
17. Appointed Under-Secretary of State for Air, 1919
18. Appointed President of the Air Council, 1919.
19. He resigned both posts (Under-Secretary of State for Air & President of the Air Council) at the end of 1919 after the Government refused to create a Secretary of State for Air during his tenure.

### Hugh Guthrie

C.R., a Member of his majesty's Privy Council and one of His Majesty counsel (Minister of Defence);

## Unionist ministers of militia, Major-General Sydney Chilton Mewburn and Hugh Guthrie\*

### Oliver Mowat Biggar,

C.R., vice-chair of the Air Board and one of His Majesty counsel (Lawyer, second Judge Advocate General for the Canadian Forces, first Canadian co-chair of the Canada-United States Permanent Joint Board on Defense. chief legal adviser and member of the Canadian delegation to the 1919 Paris Peace Treaty in Paris and Versailles  
vice chairman of the Air Board serving under Arthur Sifton  
Air Board from 1919 to 1922.  
counsel to the Department of Justice to represent the Canadian government  
1916 to 1917 - Assistant Judge Advocate General for Military District 13 (Calgary)  
1917 - Military Service Council

## Notes on "Civil Aviation"

advisor to Prime Minister Borden  
appointed Judge Advocate General of Canada in 1918  
organized Canada's Air Department to govern the aeronautics industry  
chairman of the Canadian Bar Association committee on international law  
chairman of the Canadian League of Nations Society executive committee

Colonel Samuel Hughes,  
Canadian militia officer with a pronounced distaste for British officers and regular soldiers.

Willoughby GARNONS Gwatkin

1. b. 11 Aug. 1859 in Twickenham (London), England d. 2 Feb. 1925 in Twickenham
2. Graduate of the Shrewsbury School, King's College, Cambridge.
3. Graduate of the Royal Military College, Sandhurst.
4. 1895 - Graduate of the Staff College, Camberley.
5. 1905 - director of operations and staff duties Canadian Militia
6. 1916 - appointed Companion of the Order of the Bath (CB)
7. 1918 - appointed Companion of the Order of St Michael and St George (CMG)
8. 1920 - appointed Knight Commander of the Order of St Michael and St George (KCMG)
9. Major-General Sir
10. -1922 Air Vice-Marshal, Inspector-General - Canadian Air Force.
11. provided advice and guidance to Air Commodore Arthur Tylee, Air Officer Commanding the Canadian Air Force.
12. 1922 - promoted honorary lieutenant-general, Militia Reserve.
13. During the war Gwatkin had opposed a separate Canadian air force, but his encyclopedic mind foresaw the problems and possibilities of post-war aviation.
14. Mindful of his ideas and his weariness, and having the CEF's leaders to employ, the government appointed him air vice-marshal and inspector-general of the Canadian Air Force.
15. Gwatkin saw the impossibility of maintaining a real air force on a part-time "militia" basis, as the government proposed, and understood the potential of aviation as a servant of many branches of government.
16. His prestige won the infant CAF its own ranks and uniforms.
17. He joined Sir Arthur William Currie\*, the inspector-general of the militia,
18. Major-General James Howden MacBrien\*, his successor as CGS, and
19. Sir Eugène Fiset\*, the deputy minister of militia,
20. in successfully urging that all of Canada's defence services be united in a single department of national defence.
21. At the same time he fought the army to give the CAF the same independence as the post-war Royal Air Force had in Britain.
22. As a final service to Canada, Gwatkin brought his knowledge of heraldry to the committee that designed the new Arms of Canada in 1919-20.

**Robert Leckie,**  
D.S.O., Superintendent of Air Operations - Lieutenant-Colonel

**James Stanley Scott,**  
CM, Superintendent of Certificates, Lieutenant Colonel

**Edouard Deville,**  
L.L.D D.T.S Doctor of Laws, A.T.F., Surveyor-General



Aeronautical Institute of Great Britain

## PARLIAMENTARY ACTS - BRITISH AND CANADIAN

### Defence of the Realm Act - Churchill's 1919 "Air Regulations"

The Defence of the Realm Consolidation Act, 1914 (5 Geo. 5, c. 8).

An Act to consolidate and amend the Defence of the Realm Acts. (27th November, 1914.)

*BE it enacted by the King's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows :*

- 1.—(1) *His Majesty in Council has power during the continuance of the present war to issue "regulations" (a)*
- (a) *"Regulations"*—The Regulations made under this and the amending Acts are (in accordance with provision made by Order in Council) reproduced in Consolidated Form as Part II of this Manual. As to "the continuance of the present war " see the Termination of the Present War (Definition) Act, 1918 (8 & 9 Geo. 5, c. 59)."

*for securing the public safety and the defence of the realm, and as to the powers and duties for that purpose of "the Admiralty and Army Council" (b)*

(b) (i) *Constitution of Army Council.*

The Army Council was constituted by Letters Patent of February 6th, 1904, which together with the Orders in Council of August 10th, 1904, February 15th, 1909, and August 2nd, 1910, distributing the business of the Council, are printed at pp. 1248-1252 of the Annual Volume of Statutory Rules and Orders, 1912.

By Order in Council of January 27th, 1916, it was provided that the Chief of the Imperial General Staff shall be responsible for issuing the orders of the Government in regard to military operations.

New Letters Patent are issued whenever a change in the Members of the Army Council occurs. By 9 Edw. 7, c. 3, s. 4, various powers and duties were transferred to the Army Council, and by Letters Patent of December 23rd, 1915, and Order in Council of January 27th, 1916, the constitution of the Council and the distribution of business were modified.

(b) (ii) *Air Council.*

By the Air Force (Application of Enactments) (No. 2) Order, 1918 (Order in Council of May 7, 1918), the Defence of the Realm Consolidation Act, 1914, was applied to:

- i. the Air Council,
- ii. the President of the Air Council, and
- iii. the Air Force and the officers and men thereof, and to
- iv. air force property and institutions
- v. and it was provided (Schedule) as follows:-

References to " the Army Council," " His Majesty's Forces," " His Majesty's forces by land and "military service" *shall respectively be construed as including references to the Air Council, Air Force, His Majesty's forces by air and air-force service.*

The Air Council was established by the Air Force (Constitution) Act, 1917 (7 & 8 Geo. 5, c. .51), s. 8.

(iii) *Powers of Minister of Munitions.*

Article - 3 of the Ministry of Munitions Order in Council, 1915 (printed as Statutory Rules and Orders, 1916, No. 580), provides that this enactment shall be read as if the Minister of Munitions were mentioned therein in addition to the Admiralty and Army Council.

This Order in Council was made under s. 2 of the Ministry of Munitions Act, 1915 (5 & 6 Geo. 5, c 51), which established a Ministry of Munitions.

The Ministry of Munitions Act, 1918 (8 & 9 Geo. 5, c. 60) extends the purposes of the Ministry to the supervision and regulation of the diversion to the production of articles required in times of peace of industries established or utilised for the production of war material.

*(iv) Powers of Food and Shipping Controllers.*

Ss.4, 6 of the New Ministries and Secretaries Act, 1916(6&7 Geo. 5, c. 68), provide that the Food Controller and the Shipping Controller shall respectively have such further powers as may be conferred on them by regulations under the Defence of the Realm Consolidation Act, 1914, and that regulations may be made under that Act accordingly.

For powers so conferred on the Food Controller, see Regs. 2b, ^E, 2p-2jj, 7, 8c, 8cc, 35a, and on the Shipping Controller, sec Regs. 37c, 39BBB, 39cc, 39CCC, 39dd, 39e, 39ee, 39ff.

*and of the members of his Majesty's forces and other persons acting in his behalf; and may by such regulations authorise the trial by courts-martial, (o)*

*(o) Trial by Jury.*

As to right of British subject to trial by jury, see 5 G€0. 5, c. 34, 8. 1 (2), printed at p. 7.

*or in the case of minor offences by courts of summary jurisdiction, and punishment of persons committing offences against the regulations and in particular against any of the provisions of such regulations designed:*

- (a) to prevent persons communicating with the enemy or obtaining information for that purpose or any purpose calculated to jeopardise the success of the operations of any of His Majesty's forces or the forces of his allies or to assist the enemy; or
- (b) to secure the safety of His Majesty's forces and ships and the safety of any means of communication and of railways, ports, and harbours ; or
- (c) to prevent the spread of false reports or reports likely to cause disaffection to His Majesty or to interfere with the success of His Majesty's forces by land or sea or to prejudice His Majesty's relations with foreign powers ; or
- (d) to secure the navigation of vessels in accordance with directions given by or under the authority of the Admiralty; or
- (e) otherwise to prevent assistance being given to the enemy or the successful prosecution of the war being endangered. (a)

*(a) Provisions of Regulations.*

For reference to the Regulations made as regards any particular subject, see the Analytical Index at the end of this Volume,

*(2) Any such regulations may provide for the suspension of any restrictions on the acquisition or user of land, or the exercise of the power of making by-laws, or any other power under the Defence Acts, 1842 to 1875,(b)*

(b) Defence Acts.—The Defence Acts, 1842 (5 & 6 Yict. c. 94), 1854 (17 & 18 Yict. c. 67), 1859 (22Vict.c.12),1860 (23 & 24 Yict. c. 112), and 1865 (28 & 29 Yict. c. 65), and the Defejice Acts Amendment Act, 1873 (36 & 37 Yict. c. 72), may be cited by the collective title " the Defence Acts, 1842 to 1873 " {see 59 & 60 Yict. c. 14}. Land acquisition powers under the Defence Acts were conferred on the Admiralty by the Naval Works Act, 1895 (58 & 59 Yict. c. 35, s. 2), which provides that .anu acquired by them shall be vested and managed under ss. 9 to 19 of the Admiralty Lands and Works Act, 1864 (27 & 28 Yict. c. 57), and that the corresponding provisions of the Defence Act, 1842, shall not apply. See also s. 11 of the

Ranges Act, 1891 (54 & 55 Yict. c. 54), which, as repealed in part by s. 28 of 55 & 56 Yict. c. 43, provides\* for the settlement by arbitration of the compensation for land acquired under the Defence Acts

*or the Military Lands Acts, 1891 to 1903, (c)*

(c) Military Lands Acts.

(c)(i.) "The Military Lands Acts, 1892 to 1903," which (see 63 & 64 Yict. c. 56, s. 6 ; 3 Edw. 7. c. 47, s. 2) comprise the Military Lands Acts, 1892 (55 & 56 Yict. c. 43) ; 1897 (60 & 61 Yict. c. 6) ; 1890 (63 & 64 Yict. c. 56) ; and 1903 (3 Edw. 7. c. 47).

(c)(ii.) The land acquisition powers under these Acts were extended to the Admiralty by 58 & 59 Yict. c. 35, s. 2, which provides that land acquired by them shall be vested and managed under ss. 9 to 19 of the Admiralty Lands and Works Act, 1864 (27 & 28 Yict. c. 57); the bye-law making powers were extended to the Admiralty by 63 & 64 Yict. c. 56, s. 2 (1).

(c)(iii.) The Military Lands Acts have been adapted in their application to County Associations by Regulations of the Army Council under s. 4 of the Territorial and Reserve Forces Act, 1907 (7 Edw. 7. c. 9) ("Appendix XYI. of the Territorial Force Regulations, 1912 "), printed in Statutory Rules and Orders, 1912, pp. 1211-1220.

(c)(iv.) By-laws under the Acts are " regulations " within the Documentary Evidence Acts, 1868 and 1882, and may be proved accordingly, see 55 & 56 Yict. c. 43, 8. 17 (3).

*and any such regulations or any orders made thereunder affecting the pilotage of vessels may supersede any enactment, order, charter, byelaw, regulation or provision as to pilotage. (d)*

(d) Pilotage.:

The principal enactments as to Pilotage are now comprised in the Pilotage Act, 1913 (2 & 3 Geo. 5, c. 31) and Pilotage Orders thereunder. For regulations made under s. 1 (2) above, see Regulation 39 printed at p. 136, and the Admiralty and Pilotage Authorities' Orders printed in Part III. of this Manual, pp. 466-473, referred to in footnote (b) thereto.

## References and Source Materials

### BRITISH REFERENCES AND SOURCE MATERIALS

The London Gazette

Used by reference libraries and researchers around the world, this UK government journal has been in continuously in print since the days of Lord Nelson.

The information published in the *Gazette* constitutes official recognition of the facts detailed.

### TCCA REFERENCES AND SOURCE MATERIALS

Canada as of march 6th 2016 - 13,332 Aircraft Maintenance Engineers (AMEs) <sup>403</sup>

Suggestions for amendments to TCCA Advisory Circulars are invited, and should be submitted<sup>404</sup> via the Transport Canada Civil Aviation Issues Reporting System (CAIRS) at the following Internet address:

<http://www.tc.gc.ca/wcms-sgcw/civilaviation/cairs-755.htm>

or by e-mail at: [CAIRS\\_NCR@tc.gc.ca](mailto:CAIRS_NCR@tc.gc.ca)

#### References

The following references are intended to assist in determining adequacy of supplemental ICA:

- 1 Canadian Aviation Regulations (CAR) 513 *Approval of Modifications and Repair Designs*. <http://www.tc.gc.ca/eng/civilaviation/regserv/cars/part5-subpart13-1772.htm>
- 2 Transport Canada Technical Publication: TP13850 Scheduled Maintenance Instruction Development Processes.
- 3 <http://www.tc.gc.ca/eng/civilaviation/publications/tp13850-menu-277.htm>
- 4
- 5 Air Transport Association iSpec 2200, Information Standards for Aviation Maintenance ATA Distribution Center; PO Box 511; Annapolis Junction, MD 20701; Email: [ata@pmds.com](mailto:ata@pmds.com); Tel: 800-497-3326; Fax: 301-206-9789
- 6 General Aviation Manufacturers Association's Specification No. 2, Maintenance Manual; 1400 K Street NW, Suite 801; Washington, D.C. 20005; Ph: (202) 393-1500; Fax: (202) 842-4063
- 7 Aircraft Certification Staff Instruction (ACSI) Number 22: Approval of Domestic Design Changes: Issue Number 2; (2000-08-09); and Number 23: Acceptance and Approval of Foreign Design Changes: Issue Number 1; (2000-10-02)
- 8 Aircraft Certification Advisory Circular (AC) 500-016 Issue 1 (2004-12-01; or later version): Establishing the Certification Basis of Changed Aeronautical Products
- 9 Delegations Handbook: TP12995E: Issue 2: June 10, 2003
- 10 Federal Aviation Administration – FAA Advisory Circular – AC 43.13-1A: Acceptable Methods, Techniques, and Practices – Change 3; Aircraft Inspection and Repair; AC 43.13-2A: Aircraft Alterations
- 11 Federal Aviation Administration - FAA Advisory Circular - AC 25-19, Certification Maintenance Requirements
- 12 Aging Transport Systems Rulemaking Advisory Committee, ATSRAC Web-Site: <http://www.mitrecaas.org/atstrac/> for wiring issues and resolutions

Airworthiness Manual :Transport Canada TP4914 and TP6197E

**Airworthiness Inspector : Canadian Forces manual of officers' classification structure.** Vol. 1 : general,;"A-PD-150-001/AG-001" Canada. Ministère de la défense nationale, Ottawa : Défense nationale = National Defence, 1980

<sup>403</sup> <http://www.tc.gc.ca/eng/civilaviation/standards/maintenance-menu.htm>

<sup>404</sup> <http://www.tc.gc.ca/media/documents/ca-opssvs/571-004.pdf>, D. B. Sherritt Director, Standards Civil Aviation, Transport Canada Advisory Circular # 571-004 issued 18 September 2009

## Certificate of Airworthiness Order

Certificate of Airworthiness Order : The Canada Gazette. Part II, Ottawa : Queen's Printer for Canada

International Federation of Airworthiness : International Federation of Airworthiness Technology and Engineering : Founded 1964, as International Federation of Aerospace Technology and Engineering. Name changed in 1968 to International Federation of Airworthiness Technology and Engineering (IFATE). Present name adopted 1975

air worthiness limitation : Means an approved limitation applicable to an aeronautical product, in the form of a life limit or a maintenance task that is mandatory as a condition of the type certification

## Engineering and Inspection Manual

Air Worthiness Inspection Branch:  
Organizations, Administrative Units and Committees  
Aeronautical Engineering and Maintenance  
Engineering Tests and Reliability

Index of airworthiness directives applicable in Canada :  
FORMER DESIGNATION:

Engineering and Inspection Manual, Part III, Chapter III, Foreign Airworthiness Directives OBS-Quarterly. Ottawa: Transport Canada, 1996.

"This index supersedes and replaces the "Engineering and Inspection (E&I) Manual, Part III, Chapter III", Foreign Airworthiness Directives, which was last published in January 1985. It also supersedes all previous lists of applicable ADs and MSBs published in bi-monthly "Notices to Aircraft Maintenance Engineers and Aircraft Operators" (N-AME-AOs) and in the quarterly magazine, "Feed-Back". - Foreword 405

Engineering and inspection manual.  
Issued by the Aeronautical Engineering dept.(NARC),  
Civil Aviation Division,  
Air Services Branch  
Department of Transport,  
Ottawa.

source ref : Engineering and scientific manpower, resources; their earnings, employment and education

1959 AIR SERVICES - Engineering and Inspection Manual,  
Part I - III Prepared by the Civil Aviation Branch, Air Services.

Part I - Procedure : Revised edition, June 15, 1956. Amendment List No. 12, ,April 1, 1959. Loose leaves, Cat. No.

T51-2/1-12,

Part II - Requirements, Revised edition, June 15, 1956. Amendment List No. 12, ,April 1, 1959. Loose leaves, Cat. No.

T51-2/1-12,

Part III - Forms, Revised edition, June 15, 1956. Amendment List No. 12, ,April 1, 1959. Loose leaves, Cat. No.

T51-2/1-12,

1959 AIR SERVICES - Engineering and Inspection Manual,  
Part IV Prepared by the Aeronautical Engineering, Civil Aviation Branch, Air Services.

Part IV - List of approved organizations. Issue 7, 1st December., 1959. (superseding all previous issues). Ottawa, 1959. 29p.

Loose leaves. 27cm. Cat. No. T51-2/4-7

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<sup>405</sup> Index of airworthiness directives applicable in Canada. Weekly checklist of Canadian government publications = Liste hebdomadaire des publications du gouvernement du Canada. --Hull, Que. : Supply and Services Canada. Periodical; Text in English and French.; French title varies: Nov. 17, 1978- Jan. 5, 1979.; Liste hebdomadaire des publications du gouvernement canadien from [http://www.btb.termiumplus.gc.ca/tpv2source?lang=eng&srchtxt=NAVIGABILITE&i=1&index=frw&src\\_id=CSS-4&rlang=en&titl=Index%20of%20airworthiness%20directives%20applicable%20in%20Canada%2E&fchrdrnm=48#resultres](http://www.btb.termiumplus.gc.ca/tpv2source?lang=eng&srchtxt=NAVIGABILITE&i=1&index=frw&src_id=CSS-4&rlang=en&titl=Index%20of%20airworthiness%20directives%20applicable%20in%20Canada%2E&fchrdrnm=48#resultres)

## Notes on "Civil Aviation"

Source ref: CANADIAN GOVERNMENT ,PUBLICATIONS DU GOUVERNEMENT CANADIEN CATALOGUE 1959 ISSUED BY --  
PUBLIÉ PAR **THE** QUEEN'S PRINTER - L'IMPRIMEUR DE LA REINE OTTAWA, CANADA - No,—N° SP6-359 : 79876-9--1

### 1956 AIR SERVICES BRANCH

Engineering and inspection manual,

Parts I, II and III: Technical instructions and procedures regarding civil aircraft. Revised edition including amendments

Nos. 1 to 9. Ottawa, June 15, 1956. Loose leaves. 27cm.

Prepared by the Aeronautical Engineering, Civil Aviation Division, Air Services Branch.

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Engineering and inspection manual, Parts I, II and III: Revised edition, June 15, 1956.

Prepared by the Aeronautical Engineering, Civil Aviation Division,

Air Services Branch , Amendment No. 10, July 6, 1956. Loose leaves. 27cm.

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Engineering and inspection manual : Technical instructions and procedures regarding civil aircraft. Cat. No. T51-2451

Part I - Procedure :

Revised edition, June 15, 1956. Amendment List No. 12, ,April 1, 1959. Loose leaves, Cat. No. T51-2/1-12,

Part II - Requirements,

Revised edition, June 15, 1956. Amendment List No. 12, ,April 1, 1959. Loose leaves, Cat. No. T51-2/1-12,

Part III - Forms,

Revised edition, June 15, 1956. Amendment List No. 12, ,April 1, 1959. Loose leaves, Cat. No. T51-2/1-12,

Part IV : List of approved inspection organisations and Companies engaged in the manufacture, repair and supply of aircraft and accessories.

Issue 5., 1st September, 1955. Amendment 1, additions, changes and corrections, recorded up to 15 February, 1956.

Ottawa, 1956. 8p. Loose leaves. 27cm.

Prepared by the Aeronautical Engineering, Civil Aviation Division,

Air Service Branch.

\$1 (including amendments service until re-issued). • • Cat. No. T51-2451

## APPENDIX G : Canadian "Air Regulations" 1887 - 1970

<b>CANADA - AIR REGULATIONS 1938</b>
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<b>CANADA - AIR REGULATIONS 1948</b>
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<b>CANADA - AIR REGULATIONS 1954</b>
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Issued 23rd November, 1954, (P.C. 1954-1821). Reprinted, Ottawa, 1956. 76p. 20cm. , Paper cover. .  
Contents.:

- I. Short title and interpretation.
- II. Registration, certification and marking of air-craft
- III. Aerodromes.
- IV. Personnel licensing.
- V. Rules of the air.
- VI. Air traffic control
- VII. Commercial air service Operations.
- VIII. Miscellaneous provisions.

Aeronautics Act, R.S.C. 1952 ; c.2 and 302. \$2.50 per copy. • Cat. No. T52-256



# The Education of “Engineers”

## University engineers and study of “government”

As a rule or “policy”, Engineering colleges [and Universities] offer “*minimum instruction in the study of government*”.<sup>406</sup> Frequently the course is entirely omitted, or presented from the point of view of political science<sup>407</sup>.

In the former case (course is omitted):

**engineers begin their careers without any systematic knowledge of the government** to which they owe obligations as citizens and by which they may be employed or regulated directly or indirectly in their construction and operating activities.

In the latter case (view of political science):

**engineers** acquire in connection with their study of government *only a slight knowledge, if any at all*, of the intricate and vital relations of engineering to government.<sup>408</sup>

**Thus, engineers are inadequately prepared to assume their responsibilities** either as citizens or in their profession<sup>409</sup>.....  
**literature required to fill this gap in engineering education.**

**Engineering college instruction literature should:**

- A. approach the subject of government from the standpoint of technology.
- B. lays emphasis on those aspects of government which particularly concern the engineer
- C. amplification of knowledge concerning government as law and politics to the numerous standard treatises by political scientists.
- D. study respecting the relations of technology and government
- E. treatise on technology and government in general

My purpose has not been to furnish an encyclopaedia but a suggestive guide to a field as yet almost unexplored, with the hope that other students will develop phases of the subject in detail.

Not until numerous special studies have been made respecting the relations of technology and government will it be possible to write anything approaching an ideal treatise on technology and government in general.<sup>410</sup>

The subject of "Aircraft in Warfare," with which Mr. Lanchester deals, is, and for some time will be, highly controversial. In each of its three aspects, the scientific, the military, and the material or manufacturing, it is still in the stage of experiment and speculation. The results obtained cannot always be made available for the information of the general public, and those which are available have usually been set forth in terms so technical, either in a scientific or a military sense, as to be somewhat difficult for the general reader to understand.

Very little trustworthy information, therefore, has been disseminated, and the uninstructed public, hungry for information on a novel and alluring subject, of which the national importance is evident, has fallen an easy prey to the imposter. Any plausible rogue, gifted with sufficient assurance, and aided by a ready pen or supple tongue, has been able to pose as an "aeronautical expert," and to find some kind of following.<sup>411</sup>

**Mechanical Flight.** Although the **elementary principles of mechanical flight are not of recent origin**, the practical development of the flying machine is confined almost entirely to the present century. Gravity propelled gliders and small models have been flown with success from a comparatively early date.

**There was no single element on the wright's successful machine that had not been proposed many years before** by Langley, Chanute, Montgomery, Henson, Mouillard, and others, but this first flight must be attributed principally to the fact that the

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<sup>406</sup> Government and Technology - An Outline for Engineering Students by William Beard ISBN 978-1-332-13277-5

<sup>407</sup> Government and Technology - An Outline for Engineering Students by William Beard ISBN 978-1-332-13277-5

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<sup>411</sup> Aircraft in Warfare - The Dawn of the Fourth Arm by F. W. Lanchester ISBN 978-1-331-29500-6

## Notes on "Civil Aviation"

Wrights started carefully and painstakingly to learn how to operate (By practicing with gliders) before starting on the first power machine.<sup>412</sup>

**If Langley had studied the operation of his machine as carefully as he did its theory and design, he would have been flying long before the Wrights as his original machine was afterwards successfully flown by Curtiss.**<sup>413</sup>

When once actual flight was achieved, and the success of the Wright Brothers became generally known, the **development proceeded with leaps and bounds. All the resources of science and engineering skill were at once applied to the new device until our present scientific knowledge of the aeroplane compares very favorably with the older engineering sciences.**<sup>414</sup>

The recent **investigation of engineering education** carried out with the support of the Carnegie Corporation through the **initiative of the Society for the Promotion of Engineering Education** has disclosed that **too frequently** the applicant for an engineering course has an **erroneous or a very vague notion of the nature of engineering practice.**<sup>415</sup>

This investigation showed that **something should be done to guide the boy to make a wise decision in choosing a life work.** A number of valuable pamphlets have been prepared by various institutions for the use of high-school boys, their parents, teachers, principals, and superintendents.<sup>416</sup>

This book has been written to meet **the requirements of engineers who are desirous of an introduction to the study of aeronautics. The fundamental principles of mechanics are unalterable, although the many interpretations and practical applications of such laws are the fruit of scientific labour.**

The **new science** of aeronautics, which has **necessitated a fuller understanding of the dynamics of the air**, must now be regarded as a branch of engineering, although each step forward into the realm of aeronautical research seems but to reveal an ever-increasing unexplored region.

The many unsound theories often advanced by well-intentioned people, who have had little opportunity to traverse the paths of aeronautical research, rather **tend to confuse** a new reader.

The reports of the several aeronautical laboratories have been drawn upon in the preparation of this book, and, as far as possible, no controversial matter has been discussed. Moreover, sketches and descriptions of aeroplane construction, which are of minor importance **Compared with a full understanding of the underlying principles of aeronautics**, have **only been considered briefly.** The author is greatly indebted to Mr L. Bairstow of the National Physical Laboratory for his helpful criticism and encouragement, and to Mr A. Landells, who kindly assisted in the laborious task of reading the proofs. The Aeroplane by ISBN 978-1-330-54397-9

**"Pre-war aviation was a sport; during war it has been a military weapon; after the war it will be one of the transport industries."**<sup>417</sup>

- M. d'Aubigny, French deputy and a recognised authority on aviation in France. **aply summed up the past, present, and future of:**

Before aircraft can be extensively utilized for private and commercial purposes and before aerial navigation can be developed to a point where it will afford an attractive field to insurance companies, **it will be necessary to effect a substantial readjustment of present-day conditions.**

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<sup>412</sup> Aeroplane Construction and Operation; Including Notes on Aeroplane Design and Aerodynamic Calculation, Materials, Etc by John B. Rathbun ISBN 978-1-332-09776-0

<sup>413</sup> Aeroplane Construction and Operation; Including Notes on Aeroplane Design and Aerodynamic Calculation, Materials, Etc by John B. Rathbun ISBN 978-1-332-09776-0

<sup>414</sup> Aeroplane Construction and Operation; Including Notes on Aeroplane Design and Aerodynamic Calculation, Materials, Etc by John B. Rathbun ISBN 978-1-332-09776-0

<sup>415</sup> The Engineer His Work and His Education by Robert Lemuel Sackett ISBN 978-1-331-04156-6

<sup>416</sup> The Engineer His Work and His Education by Robert Lemuel Sackett ISBN 978-1-331-04156-6

<sup>417</sup> - M. d'Aubigny, French deputy - recognised authority on aviation in France.

The public, for example, will have to acquire a considerable amount of aeronautical knowledge before it will be prepared to admit the practicability of aerial navigation. There is also a crying need for a vastly greater number of official landing fields, laid out and managed in accordance with approved safety principles. It is likewise necessary to establish standard airways duly provided with aerial lighthouses and wireless signal stations; and to pass uniform and stringent laws governing the licensing of pilots the construction and use of air-craft, and the conduct of air-navigation generally.

In the present stage of development it is impossible to discuss the subject of "Airplanes and Safety" exhaustively and fully and the present book does not attempt to do so.

The title, "Air-man," designates primarily the pilot, together with all who actually fly, but it is also intended in its wider application to include the director, the manager, etc., of commercial enterprises connected with aviation, as well as that very important person, the mechanic, the value of whose interest and intelligent co-operation is, unfortunately, often underestimated.

It is hoped that the book may also prove of interest to persons less directly concerned with its subject.

The ideal airman must necessarily be somewhat versatile. He must have in him something of the sailor, the engineer, and the scientist, added to which he must possess more than an average share of common sense.

The title, "Complete Airman," is inevitably somewhat misleading, since it is obviously impossible to compress within the limited space available in a book of this type more than a very small proportion of the matter which covers so wide a field. The fact that it is written with a view to being of use and of interest to such widely differing classes of airmen further adds to the difficulty of choosing what to include and what to omit.<sup>418</sup>

## Apprentice and Apprenticeship Program

TO ESTABLISH A PROGRAM IN A COMPANY WITH or WITHOUT A LABOR AGREEMENT, THE PERSONNEL SHOULD :

1. ORGANIZE AN APPRENTICESHIP ADVISORY COMMITTEE,
2. DETERMINE ALL KNOWLEDGE AND SKILLS NEEDED FOR THE OCCUPATION,
3. SECURE THE COOPERATION OF WORKERS AND FOREMEN WHO WILL BE PROVIDING THE ON-THE-JOB SUPERVISION,
4. ARRANGE FOR THE NECESSARY RELATED CLASSROOM INSTRUCTION,
5. APPOINT AN APPRENTICESHIP DIRECTOR TO MAINTAIN STANDARDS, AND
6. WRITE A SET OF APPRENTICESHIP STANDARDS. BASIC STANDARDS HAVE BEEN ESTABLISHED BY A FEDERAL COMMITTEE ON APPRENTICESHIP. TO CONFORM WITH THESE STANDARDS, A PROGRAM MUST PROVIDE FOR
  1. A MINIMUM AGE,
  2. A FAIR OPPORTUNITY TO APPLY,
  3. SELECTION ON BASIC QUALIFICATIONS ONLY,
  4. A SCHEDULE OF WORK PROCESSES,
  5. ORGANISED "work related" TECHNICAL INSTRUCTION,
  6. A PROGRESSIVELY INCREASING WAGE,
  7. PROPER ON-THE-JOB SUPERVISION,
  8. PERIODIC EVALUATION OF PROGRESS,
  9. APPROPRIATE RECORDS,
  10. EMPLOYEE-EMPLOYER COOPERATION,
  11. RECOGNITION OF COMPLETIONS, AND
  12. be NONDISCRIMINATORY IN ALL PHASES.OTHER AREAS COVERED ARE:  
BASIC PROVISIONS [WHICH SHOULD BE A PART OF THE PROGRAM]  
THE "ACTUAL JOB" INSTRUCTION,  
THE COST OF APPRENTICESHIP, AND  
THINGS TO REMEMBER.  
ASSISTANCE must be AVAILABLE for the apprentice.

---

<sup>418</sup> The Complete Airman by George Cyril Bailey ISBN 978-1-332-11507-5

## Early books and articles worth reading:

Standard Technical Training Notes for Engine Mechanics. Air Publication 3042 January 1952.

1500's

Da Vinci's Treatise upon the Flight of Birds as reprinted in the Aeronautical Annual, 1895.

1809

"On Aerial Navigation", Part One - Cayley

1810

1. "On Aerial Navigation", Part Two - Cayley
2. "On Aerial Navigation", Part Three - Cayley

1866

AERIAL LOCOMOTION - F. H. Wenham, Esq.

1890

The Chanute-Mouillard Correspondence, 1890

1891

The Chanute-Mouillard Correspondence, 1891

1892

The Chanute-Mouillard Correspondence, 1892

1893

The Chanute-Mouillard Correspondence, 1893

1894

1. Aerial Navigation and Flying Machines - Gaston Tissandier. January.
2. Gliding Flight - L. P. Mouillard, Cosmopolitan, February.
3. Opening Address of the 1894(?) International Conference on Aerial Navigation - Octave Chanute.
4. Progress in Flying Machines - Octave Chanute.
5. The Chanute-Mouillard Correspondence, 1894

1895

1. The Aeronautical Annual, 1895 - James Means
2. The Chanute-Mouillard Correspondence, 1895

1896

1. Indiana Dunes Diary, kept by Octave Chanute of his important gliding experiments in 1896.
2. Chicago Tribune article about Octave Chanute's gliding experiments - June 24, 1896.
3. Another Tribune article about the Chanute experiments dated September 8, 1896 concerning Butusov's 'Albatross' with a neat artist's drawing included.
4. Chicago Times-Herald article of Sept. 8, 1897 by a reporter who visited Herring at Dune Park and tried the glider himself. A great description of what it was like to fly a Chanute/Herring glider.
5. The Westchester Tribune's (Chesterton, Indiana) article of October 3, 1896 that describes Butusov's final attempt to launch the 'Albatross.'
6. Aerial Flights, a report of Chanute's experiments in Indiana. October 31.
7. James Means' The Aeronautical Annual, 1896
8. The Chanute-Mouillard Correspondence, 1896 and early 1897.

1897

1. Gliding Experiments, by Octave Chanute. An address by Octave Chanute delivered 20th of October, 1897.
2. James Means' The Aeronautical Annual, 1897

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1900

1. The Chanute Wright correspondence, 1900
2. Experiments in Flying by Octave Chanute. McClure's Magazine, June 1901
3. The Chanute Wright correspondence, 1901
4. A Report on the Aeronautical Congress Scientific American, March 2.
5. The Kress Aeroplane Scientific American, March 2.
6. Hoffman's Flying Machine Scientific American, May 4.
7. Is the Airship Coming? McClure's Magazine, September 1902
8. Aeronautics A retrospect of the year 1901 Scientific American, January 4.
9. Some Aeronautical Experiments made by the Wright Brothers. Scientific American, February 22.
10. The Villard Flying Machine Scientific American, March 8.

1903

1. The Wrights file for a patent March 23.
2. The Langley Airship. A press release issued by S.P. Langley, Scientific American, August 19.
3. Langley's Aerodrome Experiments. A report on the 12-foot aerodrome. Scientific American, August 22.
4. Experiments with Motor-Driven Aeroplanes (Gustav Whitehead). Scientific American, September 19.
5. The Berliner Aeroplane Scientific American, September 26.
6. First unsuccessful test of Langley's full-sized Aerodrome, October 7.
7. Groombridge and South's New Aeroplane Scientific American, October 10.
8. The Failure of Langley's Aerodrome. Scientific American, October 17.
9. Langley's second and final test of the "Aerodrome" ends in failure, December 8.
10. Marceau's "BUTTERFLY." Scientific American, December 12.
11. Wright flyer lifts off at Kitty Hawk, December 17.
12. Accidents to the Lebaudy and Langley Flying Machines. Scientific American, December 19.

1904

A Novel Flying Machine invented by Nemethy. The American Inventor,

1905

1. F The Wright Aeroplane and its Fabled Performance January 13, 1905.
2. Feathered Flying Machines. Scientific American, July 8.
3. A New Aeroplane built by Ludlow. Scientific American, July 15.
4. MOVIE: The Voisin-Archdeacon float glider takes to the air, July 18.
5. MOVIE: The Voisin-Blériot float glider is less successful, July 18.
6. Accident to the Montgomery Aeroplane. Scientific American, July 29.
7. Ludlow's First Successful Flight Scientific American, November 4.
8. Natural and Artificial Flight Scientific American, December 16.

1906

1. F The Wright Aeroplane and its Performances April 7, 1906.
2. US Patent No. 821,393 is awarded to Orville and Wilbur Wright, May 22.
3. MOVIE: Santos-Dumont's 14-Bis takes flight, October 23.

1907

1. A New Flying Machine invented by Nemethy. The American Inventor, July, 1907.
2. Aerial Experiment Association formed, October 1.

1908

1. Lt. Selfridge writes to the Wright brothers, asking for details about their aircraft, January 15.
2. Wright brothers respond guardedly to Selfridges' request, Jan. 18.
3. AEA Red Wing flies for the first time, March 12.
4. AEA White wing makes first flight, May 18.
5. AEA June Bug makes first flight, June 21.
6. AEA wins Scientific American Trophy, July 4.
7. AEA files patent application, July 8.
8. Wright brothers write Curtiss concerning possible patent infringement, July 20.

## Notes on "Civil Aviation"

9. The Wright Brothers Aëroplane by Wilbur Wright. Century Magazine, September, 1908.
10. Lt. Selfridge killed in accident during Wright Ft. Myer trials, Sept. 17.
11. Farman makes first cross-country flight, Oct. 30.
12. AEA Silver Dart flown for the first time, Dec. 6.

1909

1. Aeroplanes and Motors at the First Paris Aeronautical Salon. Scientific American, January 23.
2. The British Army Aeroplane Scientific American, January 30.
3. The Aeronautic Society Aeroplane Scientific American, March 13.
4. MOVIE: The first film taken from an airplane, April 24.
5. A Novel French Aeroplane made by Givaudan. Scientific American, June 5.
6. Some New American Aeroplanes Scientific American, June 5.
7. Recent French Aeroplanes and Their Performances Scientific American, June 26.
8. Glenn Curtiss wins Gordon Bennett Cup, Rheims, Aug. 28.

1911

Wild Designs in Flying Machines. Scientific American, October 14.

1912

What Mouillard Did by Wilbur Wright. Aero Club of America Bulletin, May.

Code proposed by M. Edouard d'Hooghe, President of the International Juridical Committee of Aviation; Code proposed by Professor L. Von Bar, of Gottingen; Rules adopted at the Session of 1911 of the Institute of International Law; and Extract from the Report of the Committee on Aviation of the International Law Association; Code proposed by M. Le Moyne; Hague Convention respecting Bombardment by Naval Forces in Time of War; and Articles of the Hague Reglement relative to Bombardment in Land War; Belligerents and Neutral Wireless Installations - Extracts from the Hague Conventions on Neutrality in Land and Maritime War; British Aerial Navigation Acts, 1911 and 1913, and Extract from the British Army Act; "Précis" of the Franco-German Agreement as to the admission of German Aircraft to France and of French Aircraft to Germany.

CASE, John, M.A. (Cantab), A.F.R.Ae.S.,

Technician to the Bristol Aeroplane Co.; b. 1888; s. of John Case, The Crescent, Croydon. Ed. Brighton Coll. and Magdalene Coll., Cambridge. Training at Cambridge. Hons. degree, Mathematics and Eng. Career: 1910-15 and 1919-20—Teaching Eng. at Cambridge University;

1915-18—Royal Aircraft Establishment: Research on the Structural Design of Aeroplanes and Stress Calculations for War Aeroplanes;

1918-19 : CASE, John, M.A worked for the Aircraft Production Dept. of M. of M. published the following:

- i. further Researches in Aeroplane Structures, and
- ii. Inspection of War Designs from structural point of view.
- iii. Theory of D.C. Dynamos and Motors " a University Textbook; (Cambridge: W. Heller )
- iv. Loads and Stresses in Aeroplanes : an exhaustive series of Articles in "Aeronautics" shortly to be published in book form; "
- v. Synopsis of Theory of Heat and Heat Engines. Address: Filton, Bristol.

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 COIL IGNITION FOR MOTOR CARS. C. Sylvester  
 CONVERSION OF HEAT INTO WORK. Sir W. Anderson . 6  
 CONTINUOUS-CURRENT DYNAMO DESIGN, ELEMENTARY  
 PRINCIPLES OF. H. M. Hobart . . . . 10 6  
 CONTINUOUS CURRENT MOTORS AND CONTROL APPARATUS. W. Perren Maycock 76  
 DESIGN OF AEROPLANES, THE. A. W. Judge . . . 14  
 DESIGN OF ALTERNATING CURRENT MACHINERY. J. R. Barr and R. D. Archibald 30  
 DICTIONARY OF AIRCRAFT, A. W. E. Dommett . .20  
 DIRECT CURRENT ELECTRICAL ENGINEERING. J. R. Barr 15  
 DYNAMO: ITS THEORY, DESIGN AND MANUFACTURE, THE. C. C. Hawkins and F. Wallis. In two vols. Each 12 6  
 ELECTRIC CIRCUIT THEORY AND CALCULATIONS. W. Perren Maycock 10 6  
 ELECTRICAL INSTRUMENTS IN THEORY AND PRACTICE. Murdoch and Oschwald  
 ELEMENTARY AERONAUTICS, OR THE SCIENCE AND PRACTICE OF AERIAL MACHINES. A. P. Thurston . . .86  
 ENGINEER DRAUGHTSMEN'S WORK: HINTS TO BEGINNERS IN DRAWING OFFICES 26  
 ENGINEERING WORKSHOP EXERCISES. E. Pull . .36  
 ENGINEERS' AND ERECTORS' POCKET DICTIONARY: ENGLISH, GERMAN, DUTCH. W. H. Steenbeek . . .26  
 ENGLISH FOR TECHNICAL STUDENTS. F. F. Potter . .20  
 EXPERIMENTAL MATHEMATICS Book I, with Answers G. R. Vine  
 EXPERIMENTAL MATHEMATICS Book II, with Answers G. R. Vine  
 FUSELAGE DESIGN. A. W. Judge 30  
 GAS ENGINE TROUBLES AND INSTALLATION. J. B. Rathbun 80  
 GAS, OIL AND PETROL ENGINES: INCLUDING SUCTION GAS PLANT AND HUMPHREY PUMPS. A. Garrard . .60  
 GAS AND OIL ENGINE OPERATION. J. Okill . .50  
 GAS, GASOLINE AND OIL ENGINES. Including Glossary. J. B. Rathbun 80  
 HIGH-SPEED INTERNAL COMBUSTION ENGINES. A. W. Judge 18  
 INDUCTION COILS. G. E. Bonney  
 MAGNETO AND ELECTRIC IGNITION. W. Hibbert . .36  
 MANAGEMENT OF ACCUMULATORS. Sir D. Salomons . .76  
 MANUAL INSTRUCTION - WOODWORK. S. Barter . .76  
 MANUAL INSTRUCTION - DRAWING S. Barter 4  
 METAL TURNING. J. Homer . . . .40  
 METAL WORK REPOUSSE. C. G. Leland . . .50  
 METAL WORK. (Handbook). J. S. Miller . . .40  
 MODERN MILLING. E. Pull 90  
 PLYWOOD AND GLUE, MANUFACTURE AND USE OF. B. C. Boulton 76  
 PRIMER OF ENGINEERING SCIENCE, A. E. S. Andrews . 4 6  
 PRINCIPLES OF FITTING. J. Horner . . .76  
 PRINCIPLES OF PATTERN-MAKING ... 4 . 0  
 SLIDE RULE. A. L. Higgins ..... 6  
 SLIDE RULE. C. N. Pickworth  
 SILVERWORK AND JEWELLERY. H. Wilson  
 TRIGONOMETRY FOR ENGINEERS, A PRIMER OF. W. G. Dunkley . . 50  
 TRIGONOMETRY, PRACTICAL. H. Adams . . . .50  
 TRIPLANE AND THE STABLE BIPLANE, THE. J. C. Hunsaker 30  
 WIRELESS TELEGRAPHY AND HERTZIAN WAVES. A. R. Bottone . . . . .36  
 WIRELESS TELEGRAPHY: A PRACTICAL HANDWORK FOR OPERATORS AND STUDENTS. W. H. Marchant . .76  
 WORKMANSHIP, ON. H. Wilson . . . . .16



## Appendix : Royal Aero Club Certificates List - Pilots

Royal Aero Club Pilots' Certificates List						
No.	Issued	Name		Type Flown	Died	Cause of Death
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# Notes on "Civil Aviation"

Royal Aero Club Pilots' Certificates List						
No.	Issued	Name		Type Flown	Died	Cause of Death
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Royal Aero Club Pilots' Certificates List						
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73	1911/4/25	Lt. Wilfred Parke, R.N	Brit.		1912/12/15	Handley-Page Monoplane, stalled from 40' while turning downwind at low altitude with engine problem
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# Notes on "Civil Aviation"

Royal Aero Club Pilots' Certificates List						
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Royal Aero Club Pilots' Certificates List						
No.	Issued	Name	Type Flown	Died	Cause of Death	
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# Notes on "Civil Aviation"

Royal Aero Club Pilots' Certificates List						
No.	Issued	Name	Type Flown	Died	Cause of Death	
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154	1911/11/7	Captain Eustace Broke Loraine		1912/07/05	killed in Nieuport monoplane with Staff-Sergeant R.H.V. Wilson, R.E - RFC at Stonehenge	
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# Notes on "Civil Aviation"

Royal Aero Club Pilots' Certificates List						
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# Notes on "Civil Aviation"

Royal Aero Club Pilots' Certificates List						
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232	1912/6/18	Staff-Sergeant R. H. V. Wilson, R.E - RFC		1912/07/05	the second non-commissioned RFC officer to take his pilot's certificate - killed in Nieuport monoplane with Loraine at Stonehenge	
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# Notes on "Civil Aviation"

Royal Aero Club Pilots' Certificates List						
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259	1912/7/24	Mr. Edward Petre "Petre the Painter"		24 Dec. 1912	Structural failure of wings of Martin-Handasyde mono-plane / 65 hp, 8 cyl Antoinette	
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# Notes on "Civil Aviation"

Royal Aero Club Pilots' Certificates List						
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# Notes on "Civil Aviation"

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# Notes on "Civil Aviation"

Royal Aero Club Pilots' Certificates List						
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# Notes on "Civil Aviation"

Royal Aero Club Pilots' Certificates List						
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369	1912/11/16	Mr. John Alcock	Ducrock School, Brooklands			
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# Notes on "Civil Aviation"

Royal Aero Club Pilots' Certificates List						
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Royal Aero Club Pilots' Certificates List						
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# Notes on "Civil Aviation"

Royal Aero Club Pilots' Certificates List						
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## **APPENDIX ?? : THE ENGINEERING JOURNAL - MEMBERS RELATING TO AIR ENGINEERS / AIR BOARD**

of Applications for Admission and for Transfer

April 1924 :

**ROBERT ARCHIBALD LOGAN**, of 136 West 52nd Street, New York City, U.S.A.

Born at Middle Musquodoboit, N.S., August 17th, 1892; Educ.,

Diploma, N.S. Tech. Coll. 1911;

D.L.S. 1914;

Two years study of languages and prac. astronomy in Germany (prisoner of war);

Cert. as Commercial Air Pilot and Air Engineer, Canadian Air Board;

1909, land surveys in N.S.; 1910-11, second asst.' on D.L.S. in Man., Sask.;

1912, 1st asst. on winter surveys, in Alta., 2nd asst. and leveller on base line surveys. Alta.;

1913, 1st asst. on base line surveys, Man.;

1914-15, 1st asst. settlement and inspection surveys, northern Alta.;

1915-16, aeroplane pilot and engr., R.F.C.;

1917-19, Flight Commdr., R.F.C.;

1920-23, officer in charge of ground instructional section, Canadian Air Force, Camp Borden, having charge of practical work and instruction in wireless, aerial photography, navigation and aircraft engineering.

Rank of Squadron Leader (Major) since Sept. 1921.

Special investigator on flying conditions in the Arctic regions with Canadian Arctic expedition of 1922;

1924 : manager of the Mapping Division, of the Fairchild Aerial Camera Corporation, New York City, directing a staff of twelve engineers in making aerial photographic maps.

References: E. Wilson, O. S. Finnic, J. D. Craig, A. M. Narraway, G. H. Blanchet, A. G. McLerie.

June 1924 : FOR TRANSFER FROM CLASS OF STUDENT TO HIGHER GRADE

**WILLIAM LOCHEAD DICKSON** of 76 Pinewood Avenue, Toronto, Ont.

Born at Toronto, Ont. May 18th, 1888;

Educ, B.A.Sc. (Honours), Univ. of Toronto, 1915;

1907-11, rodman, topog'r., instr'man., D.L.S. work two years, C.N.R. two years;

1912-13 (summer), instr'man., with O.L.S.;

1914 (summer), dftsman., roadways dept., Toronto;

1915-17, chief examiner, for Canadian Inspection Co. and 1917-18, for Imperial Ministry of Munitions, on component parts, relative to manufacture of 18" shrapnel shells;

1918-19, chief examiner in charge of detail inspection of machine parts, relative to manufacture of Arab 1-A Sunbeam Aero engines, for Aeronautical Inspection Directorate of Imperial Ministry of Munitions at Willys-Overland, Toronto;

1919-20, topog'r., rly. dept., H.E.P.C.;

1920-22, engr., rly. dept., H.E.P.C.;

1923 to date, demonstrator in engineering drawing, University of Toronto, Toronto, Ont.

References: P. Gillespie, C. R. Young, J. R. Cockburn, A. G. Young, T. U. Fairlie.

**WEST—THOMAS MACDONALD**, of Toronto, Ont. Born at Toronto, Ont.,

August 27th, 1899; Educ, B.A.Sc. Univ. of Toronto, 1921; Previous to graduation,

shop work, mechanical, Poison Iron Works, R.A.F., J. J. Taylor Ltd., Toronto; 1921-

22, demonstrator in thermodynamics, Univ. of Toronto; Since April 1922, connected

with J. & J. Taylor, Ltd., Toronto, Safe Works. First in Factory. Sept. 1923 given

temporary charge of Montreal branch office. Dec. 1923. returned to Toronto and

attached to head office staff. Since Sept. 1922, junior member of this firm.

References: R. O. Wynne-Roberts, P. Gillespie, C. R. Young, R. W. Angus, W. J. Smither.

July 1924 : FOR ADMISSION

**NORMAN RUSSELL ANDERSON**, of Camp Borden, Ont. Born at Walkerton,

Ont., April 29th, 1893;

## Notes on "Civil Aviation"

Educ, High School;  
Oct. 1916, joined R.F.C.;  
Dec. 1917 to Aug. 1918, employed as instructor of special flying;  
July 1920, promoted Flight- Lieut., C.A.F.;  
Sept. 1921, promoted Squadron Leader, C.A.F., and employed as certificate examiner under Air Board;  
April 1923, appointed Second in Command, Royal Canadian Air Force Station, Camp Borden, and O. i/c Training.  
References: H. F. J. Lambart, E. W. Stedman, A. Ferrier, A. G. L. McNaughton, R. B. McKay.

**JAMES LINDSAY GORDON**—, of Ottawa, Ont. Born at Montreal, Dec. 11th, 1892;  
Educ, 2 years science, McGill Univ.;  
Jan. 1916, joined Royal Naval Air Service;  
June 1918 promoted Captain .R.A.F.;  
Oct. 1918, promoted Major R.A.F., and appointed to command No. 232 Squadron;  
Mar. 1920, appointed supt. of Flying, Air Board;  
Sept. 1921, promoted, Wing Commander, C.A.F., and appointed to command C.A.F. Training Station, Camp Borden;  
May 1922, appointed Acting Director, Royal Canadian Air Force.  
References: A. G. L. McNaughton, D. R. Cameron, E. W. Stedman, R. B. McKay, A. Ferrier.

**BASIL DEACON HOBBS**—, of Winnipeg, Man. Born at Arlington, Berkshire, England Dec 20th, 1895;  
Educ, Prep. School, Business Course;  
Dec. 1915, Royal Naval Air Service;  
June 1917, promoted Flight-Lieut.;  
Jan. 1918, promoted Flight- Commander;  
April 1918, Captain, R.A.F.;  
May 1918, promoted Major, and appointed to British Aviation Mission, U.S.A.;  
Feb. 1919, appointed to Command No. 213 Squadron, R.A.F.;  
April 1920, appointed cert, examiner under Air Board;  
April 1921, appointed supt., Victoria Beach Air Station;  
May 1922, appointed Squadron Leader, Commanding R.C.A.F. Units, Manitoba.  
References: A. G. L. McNaughton, D. R. Cameron, H. F. J. Lambart, A. Ferrier, R. B. McKay.

**GEORGE OWEN JOHNSON**—, of Ottawa, Ont. Born at Woodstock, Ont.,  
Jan. 24th, 1896; Educ, Honour Matric, Ontario, and 1st Class professional teacher, Alberta;  
April 1917, joined R.F.C.;  
April 1918, promoted Captain, R.A.F.;  
July 1919 to Jan. 1920, O. i/c Canadian Air Force Detachment in Canada;  
Jan. 1920, appointed supt., Camp Borden Air Station;  
Oct. 1920, appointed to staff, Air Board, Ottawa;  
Sept 1921, promoted Squadron Leader, R.C.A.F.;  
May 1922 appointed Acting Assistant Director, R.C.A.F., and at present Squadron Leader engaged in co-operative work with engineers of the Dept. of the Interior.  
References: R. B. McKay, A. G. L. McNaughton, E. W. Stedman, A. Ferrier, D. R. Cameron.

**GEORGE MITCHELL CROIL**—, of Ottawa, Ont. Born at Milwaukee, Wis.,  
June 5th, 1893; Educ, Robert Gordon's College, Aberdeen, Scotland; passed studentship examination of Inst. C.E. England;  
Jan. 1915, commissioned 5th Battn., Gordon Highlanders T.F.; Oct. 1915, promoted Captain, Gordon Highlanders;  
July 1916, transferred to R.F.C.;  
June 1917, promoted Flight-Commander, R.F.C.;  
April 1918, promoted Major R.A.F.;  
Aug. 1918, appointed to command 19th Training Depot Station;  
Dec. 1918, placed in command Headquarters 69th Training Wing;  
June 1920, appointed Air Station Supt. in command Air Board Air Station in Alberta;  
Nov. 1923, appointed Staff Officer, Civil Operations, R.A.F.C., Headquarters, Ottawa.  
References: A. G. L. McNaughton, D. R. Cameron, H. F. J. Lambart, E. W. Stedman, A. Ferrier.

**ALBERT LAWSON CUFFE**—, of High River, Alta.  
Born at Mayo, Ireland, May 2nd, 1895;  
Educ, Sligo Grammar School and Civil Service College, Dublin;

## Notes on "Civil Aviation"

May 1917, joined Royal Flying Corps; April 1918, promoted Captain;  
Aug. 1918 to June 1919, employed as instructor of special flying;  
Aug. 1920, appointed Flight-Lieut., C.A.F. ;  
Feb. 1922, promoted Squadron Leader; Nov. 1923, appointed to command Royal Canadian Air Force Station, High River, Alta.  
References: A. G. L. McNaughton, D. R. Cameron, E. W. Stedman, H. F. J. Lambart, A. Ferrier.

**WILLIAM GEORGE BARKER**—, of Ottawa, Ont. Born at Dauphin, Man.,  
Nov. 3rd, 1891; Educ, Matric, Dauphin Collegiate;  
April 1916, joined R.F.C.;  
May 1917, promoted Captain;  
July 1918, promoted Major and appointed to Command No. 139 Squadron;  
1919-20, engaged in commercial aviation; Oct. 1922, appointed Wing Commander, C.A.F.;  
Nov. 1922, appointed to command R.C.A.F. Station, Camp Borden;  
Jan. 1924, appointed Acting Director, R.C.A.F.  
References: A. G. L. McNaughton, H. F. H. Hertzberg, G. J. Desbarats, A. F. Duguid, W. P. Anderson.

**LLOYD SAMUEL BREADNER**—, of Ottawa, Ont.  
Born at Carleton Place, Ont., July 14th, 1894;  
Educ, Collegiate Institute and private tuition;  
Dec. 1915, joined Royal Naval Air Service;  
Dec. 1916, promoted Flight-Lieut.;  
June 1917, promoted Flight-Commander;  
Nov. 1917, promoted, Squadron Commander;  
April 1920, appointed cert, examiner under Air Board;  
Jan. 1921, appointed Acting Controller Civil Aviation; Jan. 1924, promoted Wing Commander and appointed to command R.C.A.F. Station, Camp Borden.  
References: A. G. L. McNaughton, D. R. Cameron, H. F. J. Lambart, E. W. Stedman, A. Ferrier.

**TUDHOPE—JOHN HENRY**, of Dartmouth, N.S. Born at Johannesburg,  
South Africa, April 17th, 1891; Educ, English Public School; mech. dfting. and  
ap'tice engr., Randfontein Estates Gold Mining Co., South Africa; April 1917, joined  
R.F.C.; Nov. 1917, promoted Captain; Aug. 1921, Air Pilot Navigator under Air  
Board; Sept. 1921, promoted Squadron Leader, C.A.F.; June 1923, pilot and substation  
supt., Laurentide Air Service Ltd.; Nov. 1923, appointed to command R.C.A.F.  
Station, Dartmouth, N.S.  
References: H. F. J. Lambart, A. G. L. McNaughton, E. W. Stedman, R. B.  
McKay, A. Ferrier.

### FOR TRANSFER FROM CLASS OF STUDENT TO HIGHER GRADE

**ABEL—JOHN STEWART**, of Winnipeg, Man. Born at Paramaribo, Dutch  
Guiana, S.A., Dec. 13th, 1895; Educ, B.Sc. (Civil), Univ. of Man. 1921; 1915, jr.  
inspr., Greater Winnipeg Water Dist.; 1916-17 and 1919-20, dftsman., Canada Cement  
Co.; 1917-19, Lieut., R.A.F. ; 1921, dftsman., Man. Power Commn.; 1921-22, demonstrator7  
Univ. of Man.; 1922-23, dftsman., steel and concrete design, Man. Power  
Commn.; April 1923 to date, asst, engr. way and structures, Winnipeg Electric Railway,  
Winnipeg, Man.  
References: E. V. Caton, J. M. Morton, G. L. Guy, J. N. Finlayson, D. L. McLean.

### November 1924 : FOR ADMISSION

**BIGGAR—OLIVER MOWAT**, of 239 Wellington Street, Ottawa, Ont. Born  
at Toronto, Ont., Oct. 11, 1876; Educ, B.A., Univ. of Toronto, 1898; Barrister  
and Solicitor — Ontario, 1901; N.W.T. 1903; Alberta and Sask. 1907; K.C"  
(Alberta) 1913, (Canada) 1920; Counsel in a number of cases involving engineering  
problems on behalf, among other clients, of the C.P.R., the city of Calgary, and  
R. S. Lea, 1901-17; 1919-22, vice-chairman, Canadian Air Board, on organization  
and during the whole time the Air Board remained a separate department of government;

## Notes on "Civil Aviation"

1924, chairman. Interdepartmental Committee on the St. Lawrence Waterway constituted to inquire into the technical problems presented by the project; At present, chief electoral officer for Canada and Government Counsel.

References: C. R. Coutlee, D. W. McLachlan, C. H. Mitchell, J. T. Johnston, K. M. Cameron, A. G. L. McNaughton.

1929 Who's Who reference for **BIGGAR, Oliver Mowat**,

B.A., K.C., (Alberta 1918, Canada 1920) ; b. Toronto, 11 Oct. 1876 ; s. of Charles Robert Webster Biggar, M.A.K.C.; m. 1908, Muriel Elizabeth Whitney ; one daughter .

Educ. : Upper Canada Coll, and University College, Toronto.

Admitted to Ontario Bar, 1901 ;

practised in Toronto, 1901-2 ;

went to Edmonton and was admitted to Alberta Bar, 1908 ;

Benchers Law Society of Alberta, 1907-19 ;

Member Board of Governors, University Alberta, 1911-17 ;

member Edmonton Hospital Board, 1918-16;

Lt. 101st Kept. E.F., 1916;

Assist. Judge Advocate General, M.D. 3 3 (Major), 1916-17 ;

Member Military Service Council constituted to advise and assist the Government in the administration of the Military Service Act, 1917-18;

Judge Advocate General, Canada, (Lt.-Col, 1918, Col. 1919);

member of Militia Council, 1918;

member Canadian Delegation to the Paris Peace Conference, acting there as British Secretary to Commission on the Responsibility of the responsibility of the Authors of the War and on Penalties, and as Assistant- Secretary of British Delegation; Vice-Chairman, Air Board (Canada), 1919-22;

Chief Electoral Officer for Canada, 1920-27.

Publications : Canadian Patent Law and Practice.

Address: 197 Clemow Avenue, Ottawa, Canada.

T.: C 4066. Clubs: Edmonton, Edmonton University, Toronto ; Rideau, Country, Ottawa.

**LAVOIE—ALPHONSE JOSEPH**, of 294 Wilson Avenue, Montreal, Que Born at Longueuil, Que., August 22nd, 1876; Educ, Longueuil College; Private course mech. engrg. under Professor Hebert, and learned trade as pattern maker, moulder' and machinist, in father's work at Longueuil; At 21 years of age applicant left father's shops to take responsible position with James Cooper Mfg. Co. St Henry and two years later appointed engr. in charge. Shortly after this firm built the new plant at Kockfield, now the Alhs Chalmers Bullock plant. On Mr. Cooper's death accepted position of chief engr. of the Rand Drill, Tarrytown, N.Y., and two years later came back to. Canada to organize the pneumatic and mining machinery depts for the Canada Foundry Co. Ltd., of Toronto and in charge of these depts. In 1908 (due to family sickness) returned to Montreal and for several years designed and' built special machinery, also appraised and reorganized manufacturing establishments, specializing in the automobile line; In summer of 1913 went to Europe to compete for the British Aeroplane Engine Competition, after preliminary tests was allowed to enter engine in competition. Outbreak of war stopped testing of engines- In spring r J? 14 ^ Invlted by "La Presse" to prepare plans and suggestions for the de'eongestion of the Tramway Systems, over 98% of suggestions now in use; After that appointed by M. N. Hebert city controller, to prepare a general plan for transportation and the replanmng of Montreal. Made elaborate studies for that project but the Mayor of that time opposed bitterly such a move; During the last 2]4 years of the war was chief mech. engr. of the P. Lyall & Sons Construction Co., Montreal, pertaining to all shell and mechanical activities. Also chairman of the U.S. 4.7 and 155 m/m Shell Committee, Washington, D.C.; Since the war produced a complete automobile embodying all his patents in Automotive Industries, car has covered over 40 000 miles now ready to produce it in quantities; At present, president, Lavoie Automotive Devices Ltd., and president, Lavoie 4 Limited (Motor Cars). Now installing and testing patented 4 wheel brakes, etc, for the General Motors Corp'n. of Detroit and several

## Notes on "Civil Aviation"

other auto companies Replanmng Transportation System for Montreal, including bouth bhore Bridge and City Railway, Harbor and other transportation connections. References: J M. R. Fairbairn, G. R. MacLeod, H. Holgate, C. N. Monsarrat. F. L. Pratley, F. B. Brown, L. E. F. Fusey, J. Ewing.

FOR TRANSFER FROM CLASS OF JUNIOR TO HIGHER GRADE

**COWLEY—ARTHUR THOMAS NOEL**, of Ottawa, Ont. Born at Winnipeg, Man., Dec. 20th, 1888; Educ. B.Sc. McGill Univ. 1910; Study and Practice leading to commission as B.C. Land Surveyor; 1906-07 (summers), land survey parties, Manitoba; 1908-09, rly. location and constrn.. Can. Nor. Rly., G.T.P.; 1910, res. engr. Can. Nor. Rly.; 1910-11, transitman, C.P.R. high level bridge, Edmonton; 1911-12, res. engr., Can. Nor. Rly., main line, Alberta; 1913-14, articled pupil, B.C. Land Surveyor; 1915-19, Royal Naval Air Service and Royal Air Force; 1919-21, res. engr., bridge constrn., C.N.R., Vancouver Island; 1922-23, Royal Canadian Air Force, Vancouver; Feb. 1924 to date, acting controller of civil aviation, Dept. National Defence, Ottawa. References: R. Fowler, D- O. Lewis, D. C. M. Hume, J. A. Wilson. J. E. Daubney, E. F. Cooke, A. M. Narroway.

1929 Who's Who reference for :

GUTHRIE, Hon. Hugh PC, Canada, 1919; K.C. ; M.P. since 1900; Banister-At-law; b, Guelph, Canada, 18 Aug. 1866; son of Donald and Elisa Margaret Guthrie ; married 1895 to Maude Henrietta, d. of Thomas Henrietta. Scarf ; three sons, one daughter. Educ. :Guelph Collegiate Institute and Osgoode Hall, Toronto. Called to Bar, 1888 ; K.C. 1902 ; Solicitor-General of Canada, 1917-20 ; Minister of Militia and Defence of Canada. 1920-22 and July-Sep. 1926 ; Chairman or Canadian Air Board, 1920-22; Leader of Conservative Party in Canadian House of Commons, 1926-28. Address; Guelph, Canada.

Wing Commander Robert LECKIE.

D.S.O. 1918 ; D.S.C. ; D.F.C.; Commanding R.A.F. Flights - H.M.S. Courageous; Son of the late Samuel Leckie, Glasgow ; Married Bernice, d. of Mrs. Douglas O'Kane, La Plata, Maryland, U.S.A Educ.: Glasgow. Joined R.N.A.S. in 1915; served in North Sea, European War, 1914 - 18 (despatches, D.S.C., D.F.C., D.S.O.); promoted Lt-Col. 1st Central Ontario Regiment ; Commanded No. 1 Canadian Wing, R.C.A.F. ; Director of Flying Operations, Canadian Air Board, 1920; Member Canadian Air Board, 1921-28. Publications : various articles magazines and service journals, Recreations: golf, hunting. Club: Royal Air Force.

## Roosters and Fledglings : Aeronautics Courses of the R.F.C / R.A.F in Canada WW1

The Royal Air Force School of Aeronautics, Toronto Canada

Course 31 graduated May 9th, 1918

## Notes on "Civil Aviation"

Course 34 graduated June 6th, 1918

**APPENDIX ?? : CANADIAN LICENSED AIR ENGINEERS 1919 - 1942**

Canadian Air Engineer License List						
No.	Issued	Name	year		place / Emplr	Notes
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
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# Notes on "Civil Aviation"

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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
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154	1911/11/7	Captain Eustace Broke Loraine			1912/07/05	killed in Nieuport monoplane with Staff-Sergeant R.H.V. Wilson, R.E - RFC at Stonehenge
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
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190	1925					<a href="https://archive.org/stream/Aviation_Week_1925-01-26#page/n7/mode/2up/search/Air+Engineers">https://archive.org/stream/Aviation_Week_1925-01-26#page/n7/mode/2up/search/Air+Engineers</a>
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206	1923					<a href="https://archive.org/stream/Aviation_Week_1923-03-05#page/n9/mode/2up/search/Air+Engineers">https://archive.org/stream/Aviation_Week_1923-03-05#page/n9/mode/2up/search/Air+Engineers</a>
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
No.	Issued	Name	year	place / Emplr	Notes	
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213	213 Air Engineers recorded to date - ref : <a href="https://archive.org/stream/Aviation_Week_1924-04-21#page/n9/mode/2up/search/Air+Engineers">https://archive.org/stream/Aviation_Week_1924-04-21#page/n9/mode/2up/search/Air+Engineers</a>					
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
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Canadian Air Engineer License List						
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## Notes on "Civil Aviation"

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1921 : January 29 - February 26 - Air Engineer Licenses issued<sup>419</sup> to:

1. J.F Hyde, 44 Barnsdale Avenue, Hamilton, Ontario
2. H.S Quigley, 166 Balsam Ave, Toronto, Ontario
3. W.B Saunders, Tremont, King's county, Nova Scotia
4. A.W Carter, #1915 - 10A St. W. Calgary Alberta (Pilot lic as well)
5. PJ Sigalet, % Lumby P.O, British Columbia
6. T.W Siers, Union Point(% St. Agathe P.O), Manitoba
7. E.F Nicholson, 10 Glasgow St. Toronto, Ontario
8. R.K McConnell, 403 Linden Ave, Victoria, British Columbia

1921 : February 27 - March 26 - "Formal" Air Engineer Licenses issued<sup>420</sup> to:

1. H.Curtiss, % Angus P.O, Ontario
2. T.W Fletcher, 861 Retallack St. Regina, Saskatchewan
3. M. Boyes, North Regina, Saskatchewan
4. A.Tapping, Revelstoke, British Columbia
5. E.E Moore, 192 Pathenias St., Montreal, Quebec
6. H.W Hewson, P.O box 39, Clarenceville, Quebec
7. H.W Chaplin, 248 Saint Martin St., Montreal, Quebec
8. N.C Terry, % Mr. T.W Siers, Union Point(St. Agathe P.O), Manitoba
9. D.M.B Galbraith, Almonte, Ontario
10. J.L Grant, 336 Bourgeois St., Montreal, Quebec
11. J.R Robertson, Gravenhurst, Ontario
12. G.H Vasse (Esq.) % the Royal Financial Corp., Vancouver, British Columbia
13. J.J Ince, 212 - 14th Avenue W., Vancouver, British Columbia
14. R.W Corner, R.R #1, Kelowna, British Columbia

<sup>419</sup> Aviation News, the "Canadian Air Force Journal". vol. 4 no. 1, pg 21. A.F Penton and Co. Toronto, publishers

<sup>420</sup> Aviation News, the "Canadian Air Force Journal". vol. 4 no. 2, pg 10. A.F Penton and Co. Toronto, publishers



## Notes on "Civil Aviation"

15. W.H Boyd, Renfrew, Ontario
16. J.Parfitt, 37 Prescott Avenue, Toronto, Ontario
17. G.C Galloway, Stonewall, Manitoba
18. C.H Hayne (Esq.), Cheltenham County, Peel, Ontario
19. H.Gittleson, 226 Rivard St., Montreal, Quebec
20. J. Wickens, Kinistino, Montreal, Quebec
21. J.E Davis, % Camp Borden, Ontario

1921 : February 27 - March 26 - Air Engineer Licenses cancelled <sup>421</sup> :

R.C Hamilton, Box 6671, Saskatoon, Saskatchewan - due to being killed in a flying accident.

G.H Simpson, % General Motors Corp., Dayton, Ohio, U.S.A - due to being killed in a flying accident.

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<sup>421</sup> Aviation News, the "Canadian Air Force Journal". vol. 4 no. 2, pg 10. A.F Penton and Co. Toronto, publishers

Canadian Air Engineer License List						
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
	Issued	Name	Lic Type	yr	place / emplr.	Cause of Death
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
	Issued	Name	Lic Type	yr	place / emplr.	Cause of Death
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
	Issued	Name	Lic Type	yr	place / emplr.	Cause of Death
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
	Issued	Name	Lic Type	yr	place / emplr.	Cause of Death
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
	Issued	Name	Lic Type	yr	place / emplr.	Cause of Death
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
	Issued	Name	Lic Type	yr	place / emplr.	Cause of Death
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
	Issued	Name	Lic Type	yr	place / emplr.	Cause of Death
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
	Issued	Name	Lic Type	yr	place / emplr.	Cause of Death
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
	Issued	Name	Lic Type	yr	place / emplr.	Cause of Death
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
	Issued	Name	Lic Type	yr	place / emplr.	Cause of Death
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
Issued		Name	Lic Type	yr	place / emplr.	Cause of Death
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
	Issued	Name	Lic Type	yr	place / emplr.	Cause of Death
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
	Issued	Name	Lic Type	yr	place / emplr.	Cause of Death
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
Issued		Name	Lic Type	yr	place / emplr.	Cause of Death
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
	Issued	Name	Lic Type	yr	place / emplr.	Cause of Death
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
	Issued	Name	Lic Type	yr	place / emplr.	Cause of Death
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
	Issued	Name	Lic Type	yr	place / emplr.	Cause of Death
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
	Issued	Name	Lic Type	yr	place / emplr.	Cause of Death
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
	Issued	Name	Lic Type	yr	place / emplr.	Cause of Death
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# Notes on "Civil Aviation"

Canadian Air Engineer License List						
	Issued	Name	Lic Type	yr	place / emplr.	Cause of Death
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## Notes on “Civil Aviation”

Canadian Air Engineer License List						
Issued		Name	Lic Type	yr	place / emplr.	Cause of Death
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		D. H. MacCaul			Flt.-Lieut. # 1538	
		A.C Brown		1947	RCN - HMCS Magnificent	
		E.E Robertson		1945	ON. Cmdr and 1st A.E of the RCN	
		R.M Goodenough			RCAF	
		Charles Colley		1960		
		William Bolton		1929	BC	
		G.J Newton		1940	RCAF	
		J.M Clark		1925	OPAS	
		Sam McCauley		1925	OPAS	
		A.E Hutt		1925	OPAS	
		George Doan		1925	OPAS	
		C. Clarke		1925	OPAS	
		A. E. Hutt				
		Frank Hatcher			BC	
		Emil Kading			BC	bc yukon plane crash nov 6 1929
		Sydney Pickles		1930	BC	

## Notes on "Civil Aviation"

Canadian Air Engineer License List						
Issued	Name	Lic Type	yr	place / emplr.	Cause of Death	
	TREVOR H. P. MAYES			RCAF / St. Catherines		
	Emil Kading			Van BC		
	Lawrence H. Briggs			Ontario S.St M.	ex daimler car hire !	
	Beverly Briscoe			London On		
	S. N. Green			AB		
	William Bolton					
	George A. Doan			Kenora Stn		
	Phil Lariviere					
	A.W Carer (honourary)			Vic. BC		

Capt RW Maxwell - dir OPAS 1925

<https://aviation-safety.net/database/dblist.php?Country=C&lang=&page=7>